Los Alamos County Wildfire Mitigation and Public Education Project/ FEMA-HMGP-DR-4199-NM

Los Alamos County, New Mexico

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Federal Emergency Management Agency
Department of Homeland Security
800 N. Loop 288
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FEMA

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ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
ARMS	Archaeological Records Management Section
BGEPA	Bald and Gold Eagle Protection Act
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
County	Los Alamos County
CWA	Clean Water Act
CWPP	Community Wildfire Protection Plan
dbh	diameter at breast height
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
HIZ	Home Ignition Zone
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NMED	New Mexico Environment Department
NMDHSEM	New Mexico Department of Homeland Security and Emergency Management
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
project	Los Alamos County Wildfire Mitigation Project
SHPO	State Historic Preservation Officer
SWCA	SWCA Environmental Consultants
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WUI	Wildland Urban Interface

1 INTRODUCTION

The Los Alamos County (County) Fire Department has developed the Los Alamos County Wildfire Mitigation and Public Education Project (hereafter referred to as the project or Proposed Action) to reduce the threat of catastrophic wildfire, protect the lives and safety of citizens and firefighters, create defensible space around residential areas and critical facilities, and to promote ecosystem health. Specifically, the project would thin vegetation on approximately 114 acres of land managed by the County and would conduct home assessments on adjacent private lands that are within the Home Ignition Zone (HIZ) in Los Alamos County, New Mexico. The areas identified to be treated through the project are all within the Wildland Urban Interface (WUI) and would promote defensible space from a wildfire threat for approximately 750 residential homes, as well as two schools and the Los Alamos National Laboratory Pueblo Complex.

Los Alamos County is located at 7,355 feet above mean sea level, at the base of the Pajarito Mountains in north-central New Mexico. Los Alamos is the smallest county in New Mexico at 109 square miles, and is surrounded by National Forest, National Park, Pueblo, and other Federal lands. The topography of the County is characterized by flat table-topped mesas separated by steep sloped canyons. The elevation change from rim to canyon bottom ranges from 400 to 600 feet, which provides for diverse flora and fauna. The canyon bottoms hold a mix of juniper savannah and ponderosa pine stands, while south-facing slopes are dotted with thin stands of piñon, juniper, and an occasional ponderosa pine and the north-facing slopes contain ponderosa pine stands with some Douglas fir.

Los Alamos County is not unlike many other forested landscapes in the western United States that have experienced large catastrophic wildfires in recent decades. Human influences on the landscape over the past century, particularly with regard to fire suppression, have altered the composition and increased the density of vegetation, which consequently has changed the intensity and magnitude of impacts resulting from fire disturbance (Cooper 1960; Covington 2000; Covington et al. 1997). The increased vegetation provides additional fuel that can feed and spread fires quickly across large areas in a relatively short period of time, which are difficult and dangerous to control. Furthermore, densely vegetated areas are more prone to severe fire behavior that often results in catastrophic loss and/or damage to property.

In the past two decades, catastrophic wildfires in and around Los Alamos County have led to three federal disaster declarations: Federal Emergency Management Agency (FEMA) #3154 and #1329, associated with the Cerro Grande Fire, and FEMA #2933, associated with the Las Conchas Fire. The Cerro Grande Fire also prompted an Act of Congress through the Cerro Grande Fire Assistance Act. Combined, more than 1 billion dollars was paid out for damages resulting from these fires. These catastrophic wildfire events demonstrate the propensity for wildfires to occur within and surrounding the County and underscores the need to reduce fuel loads in densely forested areas to create defensible space around community centers, critical facilities, and residential areas.

Due to topography, population centers have developed on the fingerlike mesa tops that are separated by steep canyons throughout the County. Access to the ends of the mesa tops is usually serviced by only one road that provides access in and out of each mesa top. The limited access and dispersed configuration of population centers hinders the ability for rapid emergency response during wildfire events. Although the County Fire Department has been implementing vegetation treatments to reduce the fuel loads throughout the County for more than 20 years, not all areas have been treated, and some areas that have been treated need to be treated again.

Given these challenges, a critical component to mitigating the wildfire hazard in the County is to create and maintain defensible space around population centers and critical facilities and to educate the public in wildfire hazard mitigation. Hence, the County Fire Department applied for financial assistance through

FEMA's Hazard Mitigation Grant Program (HMGP) to implement a wildfire hazard mitigation project focused on treating high-risk neighborhoods throughout the County. FEMA Disaster Declaration #4199 (FEMA-4199 DR-NM) has made funds available to support projects that meet the criteria of HMGP. The proposed project meets the HMGP purpose and criteria.

Additionally, the proposed project would meet the objectives of the Community Wildfire Protection Plan (CWPP) for Los Alamos County. Under the Healthy Forest Restoration Act of 2003 (16 U.S.C. 6501–6591) was established to promote wildfire hazard mitigation in the WUI and authorizes benefits to communities that have developed a Community Wildfire Protection Plan (CWPP). The County developed a CWPP in 2001 and recently revised it in 2016. All areas to be treated by the project are within the WUI and have been prioritized for treatments in the County CWPP.

This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality regulations to implement NEPA (40 Code of Federal Regulations Parts 1500-1508), and FEMA's procedures for implementing NEPA (FEMA Instruction 108-1-1). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this EA is to analyze the potential environmental impacts of the Los Alamos Wildfire Mitigation and Public Education Project. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

SWCA Environmental Consultants (SWCA) conducted a 100% pedestrian natural resources survey of the project area on August 22-23, 2017, to identify the potential for special-status species, habitat communities regulated by the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act, jurisdictional drainages, or sensitive aquatic habitats regulated by the U.S. Army Corps of Engineers (USACE) under the Clean Water Act, and active and inactive migratory bird nests protected by the Migratory Bird Treaty Act. Additionally, SWCA conducted a 100% (intensive) cultural resources pedestrian inventory on August 21 and 22, 2017.

2 PURPOSE AND NEED

Through HMGP, FEMA provides grants to states and local governments to implement long-term hazard mitigation measures. The purpose of HMGP is to prevent or reduce long-term risk to life and property from natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Public Law 93-288, as amended, 42 U.S. Code [U.S.C.] §§ 5121-5207) and is administered in the state of New Mexico by the New Mexico Department of Homeland Security and Emergency Management (NMDHSEM).

There is a need in high-risk neighborhoods within the WUI and HIZ of Los Alamos County to reduce wildfire hazard that puts the lives of citizens and fire fighters at risk and that threaten residential structures, schools, and critical facilities of national importance (i.e., Los Alamos National Laboratory). There is also a need to develop an informed citizenry through fire safety programs and home assessments to create defensible space around private lands, in addition to maintaining the forested county lands.

3 ALTERNATIVES

3.1 No Action Alternative

The No Action Alternative provides a baseline for comparison in determining the environmental effects of the Proposed Action. Under the No Action Alternative, FEMA would not provide funding to reduce wildfire fuel loads in the target areas of the County identified in the CWPP. Population centers, schools, Los Alamos National Laboratory, and nearby structures would continue to be at risk from catastrophic fire events. Current management activities, including the maintenance of existing facilities, enforcement of building codes, and public education/awareness programs would continue. The current methods of wildfire suppression from the County Fire Department would continue when and where needed. The existing fuel load within the project area and risk of wildfire would not be reduced. This alternative would not meet the project purpose and need or the purpose of the HMGP.

3.2 Proposed Action Alternative

The Proposed Action would include vegetation thinning on approximately 114 acres of County open space lands to reduce the wildfire hazard around adjacent population centers, including residential neighborhoods, two schools, the Los Alamos National Laboratory, recreational trail system, and horse stables. The Proposed Action would include hand and mechanical thinning of trees and shrubs at seven locations, identified as Walnut Bench, Villa Bench, North Loma Linda, Ponderosa Estates Range Road, North Horse Stable Bench, Camino Redondo, and Camino Uva Project (Figure 3.1). The legal location and acres to be treated at each of the project areas is detailed in Table 3.1 below.

Table 3.1. Acres Treated and Legal Location for each Project Area

Project Area	Acres	Legal Description (Township, Range, Section, Quarter/Quarter)
Camino Redondo	5.8	Township 19N, Range 06E Section10: NE¼ SW¼
Camino Uva Project	7.2	Township 19N, Range 06E Section10: NW¼ SE¼, NE¼ SE¼
North Horse Stable Bench	23.2	Township 19N, Range 06E Section 10: NW¼ NE¼, SE¼ NW¼, SW¼ NE¼, NE¼ NE¼, SE¼ NE¼ Section 11: NW¼ NW¼, SW¼ NW¼, SE¼ NW¼, SW¼ NE¼
North Loma Linda	18.5	Township 19N, Range 06E Section 9: SE¼ NE¼, NE¼ SE ¼ Section 10: NW¼ SW¼
Ponderosa Estates Range Road	22.4	Township 19N, Range 06E Section 3: L21, L22, L23 Section 4: SE¼ SE¼, L15
Villa Bench	17.9	Township 19N, Range 06E Section 9: NW¼ SW¼, NE¼ SW ¼, NW¼ SE¼, SE¼ NW¼
Walnut Bench	18.9	Township 19N, Range 06E Section 9: NW¼ NW¼, NE¼ NW¼, SW¼ NE¼, NE¼ SE¼

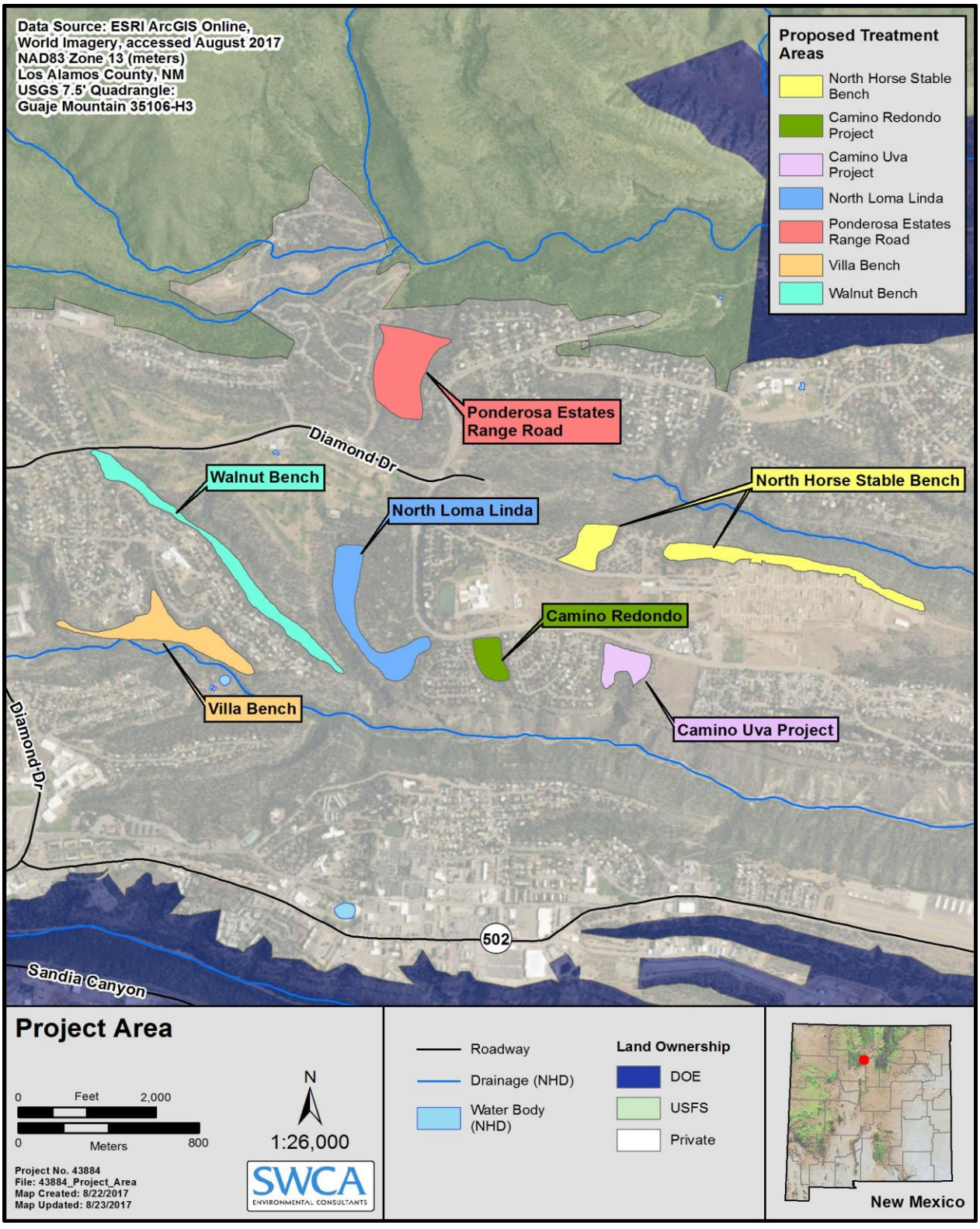

Figure 3.1. Project area.

Disposal of thinned materials would depend on the size and type of material and the site-specific characteristics and objectives of each project site. In general:

- logs would be limbed and placed on steep slopes to minimize erosion or used by the County Open Space Committee to create holding ponds for wildlife habitat;
- firewood would be stacked near the edge of project areas for the public to gather and/or donated to local church groups for distribution;
- woody shrubs in the understory would be chipped in-place and dispersed evenly across the project area using a wood chipper or mulcher; and
- some materials may be stacked into slash piles near access points and removed to an off-site location by the County Fire Department.

3.2.1 Treatment Prescription

The Proposed Action would be implemented using chainsaws, hand saws, pole saws, and a wood chipper/mulcher. Thinning prescription parameters and objectives include the following:

1. Trees approximately 9 in. (22.5 cm) diameter breast height (dbh) or less would be thinned.
2. No live piñon trees would be cut and removed.
3. No spruce trees would be cut and removed.
4. Approximately 50 to 150 trees per acre (124 to 370 trees per hectares) would be retained.
5. Treatments would retain 40% to 60% canopy cover within each project area.
6. Individual tree crowns (or, in some cases, tree groups) would be separated by a distance of approximately 10 to 25 feet (3 to 7.5 m).
7. The crowns from tree groups would be separated by a distance of approximately 40 feet (12 m).
8. Some trees 12 to 16 inches (30 to 40 cm) dbh may be removed to achieve the desired spacing and canopy cover.
9. "Ladder" fuels that allow fires to move from the ground into the tree crowns would be removed, while retaining an average of 50% coverage throughout the project area.
10. Large logs and snags 15 inches (40 cm) in diameter or larger would be retained to the maximum extent practicable to provide habitat for prey species.
11. No treatments would be implemented on slopes greater than 25%.
12. Trees and snags along canyon rims would be retained to the maximum extent possible for wildlife habitat and to provide privacy barriers between residential areas and adjacent public use areas.
13. Ponderosa pine trees less than 8-inch dbh would be cut at full length to be used as water bars on steep slopes to minimize erosion, or used to create water holding ponds for wildlife.
14. Invasive species, including understory invasive shrubs up to 6 feet tall, would be removed. Any subsequent treatments to control invasive species would be conducted in coordination with the Open Space Committee and in accordance with the County Noxious Weed Control Plan.

All project areas would be accessed by existing roads; no new roads would be built. All treatments would be conducted on County Open Space lands and implemented by the Wildland Division of the County Fire Department. Generally, treatments would be implemented by fire crews of up to 20 members. The timing of treatments would be dependent on area specific considerations and seasonal wildlife restrictions and

would be coordinated with adjacent land owners, user groups, schools, and the Los Alamos National Laboratory to identify the best times for implementing the treatments at each site. Adjacent land owners would be notified two months in advance of the treatment, and scheduled treatments would be posted on the County project webpage and reported through press releases in the local media.

Treatments would begin once the environmental analysis process is completed and immediately upon notification to proceed from FEMA and NMDHSEM. Treatments are expected to be completed within two years, once approval is granted and project implementation begins. After implementing the project, vegetation maintenance in the project areas would be ongoing, as they are throughout the County, to mitigate the wildfire hazard.

The Proposed Action would include a public education component to conduct home assessments on private property in the Home Ignition Zone that is surrounded by County lands. The educational component would include sponsored cleanup days and wood chipping days in order to effectively encourage homeowners to reduce fuels on their properties. The educational component would benefit the entire community by providing a means to assist homeowners and to monitor conditions within neighborhoods. All educational components would be coordinated and implemented by the County Fire Department.

3.2.2 Project Conservation Measures

No permits would be required for the Proposed Action. Activities in the project area would comply with the project's scope of work methodology described in Section 3, Proposed Action. The County Fire Department is responsible for implementing best management practices to control erosion and sediment, reduce spills and pollution, and provide habitat protection. Any change to the approved scope of work described in this EA as the Proposed Action will require re-evaluation for compliance with NEPA and other applicable laws and regulations. Below is a list of conservation measures that the County is committed to following during project implementation.

3.2.2.1 SOILS, WATER, AND VEGETATION RESOURCES

1. Off-road use of wheeled equipment will only occur during times when soils are dry to minimize soil compaction, soil displacement, and rutting and erosion, as well as to minimize impacting the Jemez Mountains salamander that may occupy the area and is known to be active on the surface during wet conditions.
2. No wheeled equipment will be allowed within a 100-foot buffer zone of wetlands and streams to mitigate disturbance of riparian and wetland vegetation, protect soils from compaction and other disturbances, and protect water quality.
3. Vegetation encroaching on wetland areas and less than 10 feet tall will be cut by hand 6 inches above ground, with no ground disturbance.
4. No chipped materials will be dispersed into water bodies, and no trees would be felled into water bodies.
5. The accumulation of chipped materials will be limited to an average maximum of 4 inches deep and spread evenly throughout the treatment area. This will allow for grasses and other ground vegetation to grow up through the shredded woody mulch and help retain ground moisture.
6. Vehicles and equipment will be cleaned of soil and debris capable of transporting weed seed prior to beginning work in each treatment area to prevent the spread of noxious weeds.

7. Water bars will be created from 8-foot-long ponderosa pine trees cut in the vicinity and installed on steep slopes to minimize erosion.
8. No thinning will be conducted on slopes greater than 25%.
9. Fuels will not be stored within ephemeral drainages, wetlands, or other water bodies in the project area. Refueling equipment will not be allowed within 100 feet of drainages, wetlands, or other water bodies in the project area.

3.2.2.2 WILDLIFE RESOURCES

10. In compliance with the Migratory Bird Treaty Act (MBTA) and Bald and Gold Eagle Protection Act (BGEPA), cutting or removing vegetation, including snags, will occur outside of the migratory bird breeding season (March 1–August 31). If vegetation removal cannot avoid the bird breeding season, nesting surveys will be completed prior to project implementation to identify any occupied nests and establish avoidance buffers until the young have fledged.
11. No treatments will be conducted in the North Horse Stable Bench and Walnut Bench treatment units from June 15 through October 30 to minimize the potential for directly impacting Jemez Mountains salamanders that may be in the area.
12. To mitigate indirect impacts to the Jemez Mountains salamander from soil compaction, off-road use of wheeled equipment will be restricted to using one path in and out of each project area.
13. Off-road use of wheeled equipment will only occur during times when soils are dry to minimize soil compaction, soil displacement, rutting and erosion, as well as to minimize impacting Jemez Mountains salamanders that may occupy the area.
14. At least 50% canopy cover on north-facing slopes in the North Horse Stable Bench and Walnut Bench treatment units will be retained to promote suitable habitat for (or to minimize impacts to potentially suitable habitat for) Jemez Mountains salamanders.
15. Large decaying coniferous logs will be maintained in the project area to maintain suitable habitat for Jemez Mountains salamanders.
16. Douglas fir (*Pseudotsuga menziesii*) will be retained in the North Horse Stable Bench and Walnut Bench treatment units, either standing or as felled logs, to provide habitat for the Jemez Mountains salamander.
17. Suitable habitat will be protected where possible from disturbance activities including the use of heavy equipment (compacting soil), or any activity that will desiccate or fragment the habitat.
18. To minimize indirect impacts to Jemez Mountains salamanders from soil compaction, off road use of wheeled equipment will be restricted to using one path in and out of each treatment unit.
19. If work must take place during Mexican spotted owl breeding and nesting season from March 1 to August 31, nesting surveys must be conducted by a permitted biologist prior to project implementation in order to identify any occupied nests and establish avoidance buffers until the young have fledged.

3.2.2.3 CULTURAL AND HISTORIC RESOURCES

20. In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured and access to the sensitive area restricted. If unmarked graves or human remains are present on private or state

land, compliance with the New Mexico Cultural Properties Act (Article 18, Section 6, Subsection 11.2 (18-6-11.2), NMSA 1978, also known as the Unmarked Burial Statute is required. NMDHSEM will require the applicant to stop work immediately in the vicinity of the discovery. OEM will immediately notify FEMA, and law enforcement agencies of the discovery, which shall notify the Office of the Medical Investigator (OMI) and the SHPO. OMI shall evaluate the remains for medicolegal significance with minimal disturbance of the remains. OMI will terminate the discovery of any non-medicolegal human remains to the SHPO, who shall proceed pursuant to the Unmarked Burial Statute and its implementing regulations found at 4.10.11 NMAC. For any questions for human remains on state or private land, contact State Archeologist, Bob Estes, (505) 827-4225, Fax (505) 827-6338, bob.estes@state.nm.us.

3.2.2.4 PUBLIC HEALTH AND SAFETY

21. Personnel and public safety will be the highest priority when implementing thinning activities.
22. The County Fire Department will coordinate treatment schedules with affected parties in the vicinity of the thinning area, including adjacent property and business owners, schools, public places, Los Alamos National Laboratory, County departments, historical society, user groups, and other interested parties.
23. The public will be notified of upcoming thinning projects through press releases, signs posted in the area, and updates posted on the project website.
24. Educational outreach will be implemented prior to, during, and after the thinning treatments to explain the importance of creating defensible space and mitigating wildfire hazards in and around population centers.
25. To minimize potential occupational safety and health risks, construction workers and equipment operators are required to wear appropriate personal protective equipment (PPE) and to be properly trained for the work being performed.
26. Transport of personnel and equipment will use existing roads.
27. To minimize noise disturbance impacts, thinning activities would be limited to occur between the hours of 8 a.m. to 6 p.m., and all equipment and machinery used would meet all applicable local, state, and federal noise control regulations.
28. All waste material associated with the project must be disposed of properly and not placed in identified floodway or wetland areas or in habitat for species listed in the Endangered Species Act (ESA).

3.3 Alternative Considered and Eliminated from Detailed Analysis

Prescribed burning to reduce fuel loads was considered but determined to be nonviable. Prescribed burning, which involves setting a controlled fire in a predetermined area, is the most natural way to reduce the fire hazard and promote the growth of native vegetation. However, prescribed burning was determined to be a nonviable alternative by the County Fire Department because of concerns regarding the ability to control the fire considering the proximity to population centers, including two schools, residential structures, and the Los Alamos National Laboratory. No other alternative was identified that would meet the purpose and need and result in less impacts to the environment, therefore, only the No Action and Proposed Action were brought forward for detailed analysis.

4 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section contains the evaluation of potential effects of the No Action Alternative and the Proposed Action on the human and natural environment.

4.1 Resources Not Affected and Not Considered

Table 4.1 provides an overview of the environmental resources that have been determined not be affected by the No Action or Proposed Action alternatives. These resources have been eliminated from further analysis in this EA.

Table 4.1. Environmental Resources Not Affected

Resource	Reasoning	Source
Seismicity	While the project area does have a fault line running through it, due to the nature of the Proposed Action on the surface, there would be no impacts to seismicity. Therefore, it is not considered for further analysis.	USGS 2014 USGS 2017a
Wild and Scenic Rivers	The National Wild and Scenic Rivers System (P.L. 90-542; 16 U.S.C. 1271 et seq.) was created in 1968 to preserve rivers with outstanding natural, cultural, and recreational value in a free-flowing condition. There are no designated wild and scenic river segments within or near the project area, and therefore, they are not considered for further analysis.	USFS 2017a
Coastal Resources	Because the project area is in New Mexico, which is not a coastal state, coastal resources are not considered for analysis in this EA.	N/A
Groundwater	The project area sits over an unnamed aquifer that is classified as other rocks – rocks that are generally poorly permeable but locally may contain productive aquifers. The project area does not fall within the Aquifer Mapping Program area that is studied by the New Mexico Bureau of Geology & Mineral Resources. Due to the rock content of the aquifer and because it has not been identified by the State for further study and monitoring, it is unlikely that any groundwater resources would be impacted by this project, and therefore, it is not considered for further analysis.	USGS 2003 NMBGMR 2017
Hazardous Waste	There are no hazardous waste sites within the project area according to the EPA Envirofact website. The closest hazardous waste sites are approximately 1.5 miles away.	EPA 2017a

4.2 Physical Resources

This section provides an overview of the affected area and potential environmental effects of the No Action and Proposed Action Alternatives on soils, geology, air quality, and climate change.

4.2.1 Soils and Geology

Surface geology within the project area includes large blocks of older andesite in caldera-collapse breccia facies locally exposed on the resurgent dome of the Valles Caldera, i.e., surface rock outcrops. These rock outcrops comprise 70% of the surface in the project area. According to the Natural Resources Conservation Service (NRCS 2017), there are five mapped soil types within the project area, including Rock outcrop, Carjo loam (18%), Mirand-Alanos complex (10%), Hackroy-Nyjack association (3%), and Rock outcrop-Hackroy complex (< 0.5%). These soils types are well-drained, and none are classified as

hydric soils or as prime farmlands. **Error! Not a valid bookmark self-reference.** describes the composition of soils and rock outcrop within each project area.

Table 4.2. Soils within the Project Area

Project Areas	Soil Name	Project Area	
		Acres	Percent
North Horse Stable Bench	Rock outcrop	17.5	75.2
	Hackroy-Nyjack association, 1 to 5 percent slopes	3.0	12.8
	Carjo loam, 1 to 9 percent slopes	2.8	12
Camino Uva Project	Rock outcrop-Hackroy complex, 1 to 8 percent slopes	0.4	5.5
	Rock Outcrop	0.3	3.9
	Carjo loam, 1 to 9 percent slopes	6.5	90.7
North Loma Linda	Rock outcrop	16.4	88.2
	Carjo loam, 1 to 9 percent slopes	2.2	11.8
Ponderosa Estates Range Road	Mirand-Alanos complex, 5 to 40 percent slopes	11.6	51.6
	Rock outcrop	10.8	48.1
	Carjo loam, 1 to 9 percent slopes	0.1	0.3
Villa Bench	Rock outcrop	17.5	97.9
	Carjo loam, 1 to 9 percent slopes	0.4	2.1
Walnut Bench	Rock outcrop	16.5	87.3
	Carjo loam, 1 to 9 percent slopes	2.4	12.7
Camino Redondo	Carjo loam, 1 to 9 percent slopes	5.8	100

4.2.1.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken to directly impact soils or geology in the project area. However, the existing condition and potential risks to soils and geology from a wildfire event would remain, as well. When soils are burned, the physical and chemical properties of soils (i.e., temperature, moisture, and biotic characteristics) can be compromised, which affect the soils ability to cycle nutrients. Additionally, the loss of vegetation resulting from wildfires can cause soils to become exposed to direct rainfall and susceptible to an increased rate of erosion after the burn.

4.2.1.2 PROPOSED ACTION ALTERNATIVE

The Proposed Action would not result in any significant soil or geologic disturbance. The Proposed Action would thin vegetation by cutting trees and removing the understory brush, but the areas would not be entirely cleared of vegetation. Per the treatment prescriptions, 50 to 150 trees per acre would be retained; thus the Proposed Action would not result in exposed soils and increased rates of soil erosion. Additionally, soil stability would be preserved by leaving stumps of cut trees in place and limiting vegetation removal on steep slopes. Per the conservation measures listed in Section 3.2.2, soil impacts

would be mitigated by not removing vegetation on slopes greater than 25% and by placing horizontal water bars on steep slopes to support soil stabilization.

There may be temporary soil disturbance in the form of compaction and displacement from the use of wheeled equipment (i.e., the wood chipper). To minimize these impacts, the movement of wheeled equipment would be limited to one path in and out of each project area and would only be used off roads when soils are dry. The Proposed Action also includes chipping some of the woody debris and dispersing it on the ground within the unit, which will further help stabilize soils and retain soil moisture.

4.2.2 Air Quality and Climate Change

The Clean Air Act (CAA; 42 U.S.C. 7401 et seq.) sets the standards for National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. These standards include maximum concentrations of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and particulate matter with a diameter of up to 2.5 microns ($PM_{2.5}$) or 10 microns (PM_{10}). States must meet the Federal NAAQS limits, but they may also set limits less than the federal level, as well as list limits for other air pollutants not on the NAAQS list. The State of New Mexico has issued its own air quality limits for total suspended particles and sulfur compounds, and lowered the State limits for carbon monoxide and nitrogen dioxide under Title 20, Chapter 2, Part 3 of the State Environmental Protection laws, to minimize greenhouse gasses associated with climate change. Based on these current federal and state air quality standards, the project area is considered to be in attainment (EPA 2017b, NMED 2017).

4.2.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus air quality within the proposed project area would remain the same. However, if the vegetation treatments did not occur, the risk for a wildfire would increase which could contribute to adverse impacts on air quality and the climate during the wildfire by releasing carbon and particulate matter into the atmosphere.

4.2.2.2 PROPOSED ACTION ALTERNATIVE

Air quality impacts under the Proposed Action Alternative would be localized and temporary and would only occur during thinning activities. During project implementation, the equipment used would include a chainsaw, wood chippers, and trucks with trailers to haul equipment and debris. This equipment would burn hydrocarbon fuels, which would result in a temporary incremental increase in greenhouse gas emissions. However, all machinery used will be properly maintained and stored to limit the amount of greenhouse gas emissions that are emitted from vehicles and construction equipment.

4.3 Water Resources

This section provides an overview of the affected area and potential environmental effects of the No Action and Proposed Action Alternatives on water quality, wetlands and floodplains

4.3.1 Water Quality

The project area is located along Pueblo Canyon, an ephemeral tributary to Los Alamos Canyon, which drains into the Rio Grande above the Cochiti Reservoir. Pueblo Canyon is within the Upper Rio Grande watershed (U.S. Geological Survey Hydrologic Unit Code [HUC] 13020101). Surface water in Pueblo Canyon occurs primarily as short-lived and intermittent stream flows (Figure 4.1). Since

the mid-1940s, the streamflow in Pueblo Canyon has been dominated by effluents discharged from laboratory facilities and sewage treatment plants (PPWP 2004).

The New Mexico Environment Department (NMED) is the regulatory agency responsible for compliance with water quality standards in New Mexico. The NMED's 2016 Integrated Report for CWA Sections 303(d) and 305(b) characterizes the quality of New Mexico's surface waters and identifies waters that do not meet the water quality standards and places them on the 303(d) list for the State (NMED 2016).

The Pueblo Canyon ephemeral stream that is within the project area is listed on the State's 303(d) list as a Category 5/5c impaired water body for aluminum, gross alpha (radioactive particles), and polychlorinated biphenyls. Acid Canyon stream is outside of the project area, but is a tributary to Pueblo Canyon stream. Acid Canyon stream is also listed as a Category 5/5C impaired water body for the same contaminants, and is considered to be the primary contributor of contamination in the Pueblo Canyon stream (EPA 2015, NMED 2016). Acid Canyon was the original disposal site for liquid wastes generated by research on nuclear materials during World War II and had untreated radioactive effluent discharged into it until 1964. Although there have been several decontamination projects in Acid Canyon, there is still residual radioactivity associated with sediments in Pueblo Canyon (PPWP 2004).

4.3.1.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken to directly impact water quality. However, the existing condition and potential risks to water quality from a wildfire event would remain. Because the County has had documented soil contaminants, a severe wildfire in the area could impact water quality from post-fire storm water transporting and draining soil contaminants into water bodies. In fact, changes in water quality after the Cerro Grande Fire in 2000 were in part attributed to contaminants transported by storm water runoff into the water bodies (PPWP 2004).

4.3.1.2 PROPOSED ACTION ALTERNATIVE

There is very little risk or potential for tree thinning actions to impact water quality. Potential impacts could result from contaminants spilled or drained into water bodies, e.g., an accidental spill when fueling chainsaws or fuel leaking from the chipper. The conservation measures would mitigate the potential for these impacts by prohibiting storage of fuel and refueling of equipment within 100 feet of water bodies. The Proposed Action would reduce the risk of a severe wildfire event and post-fire impacts such as soil contaminants draining into water bodies and impacting the water quality.

4.3.2 Wetlands

SWCA conducted a 100% pedestrian survey of the project area, investigating the presence of potential waters of the U.S. and special aquatic sites, including wetlands, on August 22 and 23, 2017. Potential waters of the U.S. were identified by the presence of an ordinary high water mark (OHWM), defined bed and bank, or the three mandatory U.S. Army Corps of Engineers (USACE) criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. The presence/absence of wetlands was identified in the field using routine on-site delineation methods as detailed in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010).

During SWCA's field surveys, all National Hydrography Dataset (NHD) (USGS 2017b) drainages were investigated. Twelve potential waters of the U.S. were identified in the project area, which consisted of 10 ephemeral streams (**Error! Not a valid bookmark self-reference.**) and two wetlands (Table 4.4). Representative photographs of the water features in the project area are included in Appendix A, Biological Assessment.

Table 4.3. Mapped Streams and Drainages in the Project Area

Streams and Drainages						
Final (Report) Number	**Field Number**	**Name**	**NHD Flowline?**	**Average Width (feet)**	**Total Area**	
					Acres	**Hectares**
DR01	DR01	Drainage	No	1.00	0.03	0.01
DR02	DR02	Drainage	No	1.00	0.01	0.00
DR03	DR03	Drainage	No	3.00	0.02	0.01
DR04	DR04	Drainage	No	1.00	0.07	0.03
DR05	DR05	Drainage	No	1.00	0.01	0.01
DR06	DR06	Drainage	No	3.00	0.11	0.04
DR07	DR07	Drainage	No	3.00	0.04	0.02
DR08	DR08	Drainage	No	1.00	0.02	0.01
DR09	DR09	Drainage	No	2.00	0.02	0.01
ST01	ST01	Stream	Yes	3.00	0.01	0.00
Total					**0.34**	**0.14**

Table 4.4. Mapped Wetlands in the Project Area

Mapped Wetlands			
Final (Report) Number	**NWI Wetland**	**Total Area**	
		Acres	**Hectares**
Wetland 1	No	0.01	0.00
Wetland 2	No	0.08	0.03
Total		**0.09**	**0.03**

Wetlands provide flood control, recharge groundwater, stabilize stream flows, improve water quality, and provide habitat for wildlife. Executive Order (EO) 11990, Protection of Wetlands, requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. FEMA regulations in 44 CFR 9, Floodplain Management and Protection of Wetlands, set forth the policy, procedures, and responsibilities to implement and enforce EO 11990, which prohibits FEMA from funding construction in a wetland unless no practicable alternatives are available.

The two recorded wetlands in the project area would not be impacted by the proposed project, as there would be no construction in either wetland and no dredge or fill of the wetlands from the Proposed Action. Additionally, the 100-foot buffer around surface waters would prevent disturbance to soils and vegetation surrounding the wetlands.

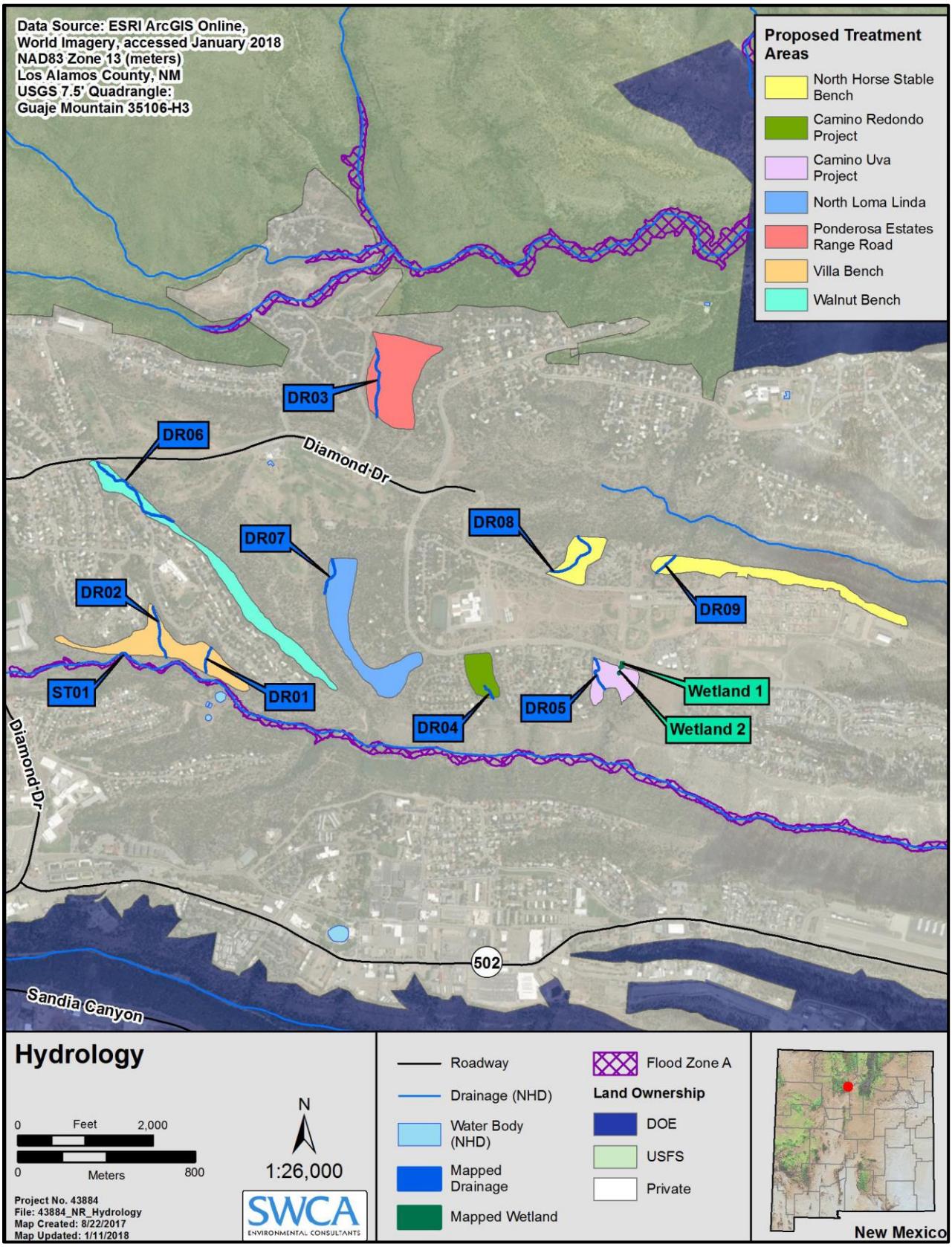

Figure 4.1. Surface waters, wetlands, and floodplains within the proposed project area.

4.3.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken and no impacts to water resources, and the existing condition and potential risks to water resources from a wildfire event would remain as they currently are. A wildfire could damage the two wetlands within the project area by destroying vegetation and drying the water source. Additionally, there could be post fire impacts, such as channel bank erosion, accumulation of sediment in water bodies and flooding. These impacts would result from the loss of vegetation causing increased storm water flow rates that destabilize soils, which are then transported and drained into surface water bodies and fill them with sediment. Sediment loading in water bodies can change the hydrologic function of wetlands and compromise their ability to support aquatic vegetation. In severe circumstances, sediment can cause a wet area to become completely dry from the amount of silt and dirt deposited from the runoff and erosion.

4.3.2.2 PROPOSED ACTION ALTERNATIVE

Potential impacts to wetland plants, soils, and hydrologic function from thinning vegetation could be caused by heavy equipment crushing wetland plants and compacting soils, fuel leaks or spills and disturbance that alters water flow caused by placing debris and chipped materials in the wetland, or heavy equipment ruts redirecting water flow. However, the project conservation measures eliminate the potential for these impacts by limiting thinning activities to foot traffic and the use of hand tools only around wetlands, prohibiting the use of wheeled vehicles from coming within 100 feet of wetlands and prohibiting dispersal of chipped woody materials or felling trees into wetlands. Hence, there would be no impacts to wetland plants, soils, or the hydrologic function of wetlands or to water quantity downstream of the project area resulting from the Proposed Action.

4.3.3 Floodplains

Within the proposed project areas, there is a narrow floodplain (zone A) that follows along the Pueblo Canyon ephemeral stream (see Figure 4.1). Approximately 0.15 acre of the Villa Bench proposed project area is within Zone A of the 100-year Floodplain, per FEMA Flood Insurance Rate Maps 35028C0040C and 35028C0045C, dated 07/18/2011. The width of the floodplain is approximately 55 feet where it intersects with the Villa Bench project area. The remainder of the project area is located outside the 100-year floodplain in Zone X.

EO 11988 prohibits FEMA from funding improvements in the 100-year floodplain unless no practicable alternative is available. In order to comply with the requirements of EO 11988, the Water Resources Council developed an eight-step process that agencies should conduct as part of their decision-making on projects that have potential impacts to or within wetlands and the floodplain (44 CFR 9.3). In general, the process includes determining if the Proposed Action would occur within the 100-year floodplain, assessing if and how the Proposed Action would impact the floodplain, and identifying mitigations or alternatives if impacts would occur. The eight-step process is included in Appendix G.

In answering the questions per the eight-step process, it was determined that the Proposed Action would not impact the floodplain because it does not include constructing permanent structures or improvements of any kind within the floodplain, nor would the Proposed Action impede or redirect flood flows, or place any fill within the floodplain. Hence, it was not necessary to develop additional mitigations or alternatives per the eight-step process.

4.3.3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken that would impact the floodplain. However, the existing condition and potential risks from a wildfire event would also remain. Post-fire impacts could cause channel bank erosion and an accumulation of sediment and debris in the floodplain, which could alter the floodplain by impeding or redirecting flood flows.

4.3.3.2 PROPOSED ACTION ALTERNATIVE

As described above, the eight-step review process was completed and determined that the Proposed Action would not have any long-term permanent impacts to the floodplain because no permanent structures or improvements are proposed. While potential impacts from thinning vegetation could cause erosion or accumulation of sediment and woody products deposited in the floodplain, these impacts are not expected, as the thinning prescriptions have been designed to retain vegetation (i.e., 50–100 trees per acre) and project conservation measures would minimize impacts to soil disturbance. Since the floodplain overlaps Pueblo Canyon Stream, the water conservation measures would also apply. For example, there would be no thinning on slopes greater than 25%, no woody debris or chipped materials would be deposited in water bodies, and water bars would be installed on steep canyon slopes to reduce erosion.

4.4 Biological Resources

This section provides an overview of the affected area and potential environmental effects of the No Action and Proposed Action Alternatives on vegetation, wildlife, and federal- and state-listed species. SWCA conducted a 100% pedestrian natural resources survey of the project area on August 22 and 23, 2017, to document vegetation communities, identify the potential for special-status species and habitat communities regulated by the U.S. Fish and Wildlife Service (USFWS) under Section 7 of ESA, and identify active and inactive migratory bird nests protected by the MBTA.

4.4.1 Vegetation

The project area is located within one U.S. Environmental Protection Agency (EPA) Level IV ecoregion, Rocky Mountain Lower Montane-Foothill Shrubland (Griffith et al. 2006). This ecoregion is characterized by ponderosa pine forests, sagebrush shrublands, pinyon-juniper woodlands, and foothill-mountain grasslands. It also includes areas of mountain mahogany shrublands and scattered Gambel oak (*Quercus gambelii*) woodlands. The woodlands are often interspersed with mountain big sagebrush (*Artemisia tridentata*), skunkbush (*Rhus* sp.), serviceberry (*Amelanchier* sp.), fringed sage (*Artemisia frigida*), rabbitbrush (*Ericameria nauseosa*), blue grama (*Bouteloua gracilis*), junegrass (*Koeleria macrantha*), western wheatgrass (*Pascopyrum smithii*), and Indian ricegrass (*Achnatherum hymenoides*).

The project area is primarily composed of ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), alderleaf mountain mohagany (*Cercocarpus montanus*), Gambel oak, New Mexico locust (*Robinia neomexicana*), Arizona mountain ash (*Sorbus dumosa*), quaking aspen (*Populus tremuloides*), and blue grama (*Bouteloua gracilis*). None of these species corresponds to a special-status species. No State of New Mexico noxious weeds were identified during the surveys. A complete listing of the plants observed in the project area is available in Appendix A, Biological Assessment.

Vegetation is dense in the project area, including trees and the understory brush that enable fires to spread quickly and serve as ladder fuels, moving the fire from the ground into the crowns of forest stands. Crown fires often burn hotter and faster and have widespread mortality. Mitigating the wildfire risk on these

County open space lands is especially needed because they are a threat to adjacent to residential areas and population centers.

4.4.1.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, no treatments would be implemented to change current vegetation conditions and the potential risks from a wildfire would remain. As such, the adjacent residences, businesses, and community areas would continue to be at risk from fuel loads on forested county lands, and the wildfire suppression challenges would remain. Post wildfire events could cause changes to the composition of vegetation species and increase the potential for invasive and non-native species to spread and/or become established.

4.4.1.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, vegetation on 114 acres of County lands would be thinned using the prescription parameters detailed in Section 3.2.1. The Proposed Action would reduce fuel loads, improve stand structure and vigor, develop defensible space, and make firefighting conditions more manageable should a wildfire occur. Following the thinning prescription, the vegetation treatments would also support ecosystem health, habitat conditions for wildlife and plants, and protect scenic values from being lost or altered by wildfire.

The disturbance associated with thinning/removing vegetation would provide opportunities for invasive species to become established or spread in the project area. However, to minimize the potential spread of invasive species from treatment activities, vehicles and equipment would be cleaned of soil and debris capable of transporting weed seed before entering project areas. Additionally, the Proposed Action includes removing the understory of invasive shrubs up to 6 feet tall and the County has an active program and Noxious Weed Control Plan to address invasive species after implantation. Hence, potential for nonnative invasive species to increase post implementation would be minimal; and in fact could be improved as the Proposed Action includes removing non-native invasive shrubs.

4.4.2 Threatened and Endangered Species and Critical Habitat

Section 7 of the ESA of 1973 (16 U.S.C. § 1536) requires federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of threatened, endangered, or proposed species or cause destruction or adverse modification of their critical habitats. There are five federally listed species and eight state special-status species that have the potential to occur. The project areas are not within any designated or proposed USFWS critical habitat.

Table 4.5 provides an evaluation for all thirteen federal and state listed species for Los Alamos County, New Mexico, including the rationale for whether the species would or would not likely occupy the project area. No special-status species were observed during the survey.

Table 4.5. Federally Listed and State Special-status Species for Los Alamos County

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Amphibians				
Jemez Mountains salamander (*Plethodon neomexicanus*)	USFWS E w/CH; State E	Endemic to mixed-conifer forests in the Jemez Mountains in Sandoval, Los Alamos, and Rio Arriba Counties of north-central New Mexico. Occurs in mixed-conifer forests, consisting primarily of Douglas-fir (*Pseudotsuga menziesii*), blue spruce (*Picea pungens*), Engelmann spruce (*Picea engelmannii*), white fir (*Abies concolor*), limber pine (*Pinus flexilis*), ponderosa pine *(Pinus ponderosa),* Rocky Mountain maple (Acer *glabrum*), and quaking aspen (*Populus tremuloides*) (Degenhardt et al. 1996). Species has occasionally been found in pure stands of ponderosa pine.	May occur. Suitable mixed-conifer forests exist in the project area. Specifically, Walnut Bench and North Horse Stable Bench project areas contain suitable habitat.	May affect, is not likely to adversely affect.
Birds				
Mexican spotted owl (Strix occidentalis lucida)	USFWS T w/CH	Dependent on the presence of large trees, snags, downed logs, dense canopy cover, and multistoried conditions within predominantly mixed-conifer and pine-oak habitats on a steep mountain hillside. Critical habitat for the species occurs approximately 6 miles (10 km) to the south near Water Canyon.	May occur. Portions of Pueblo Canyon provide suitable nesting habitat for owls, i.e., steep canyon walls; however, the steep-walled portions of the canyon are outside the project area boundary.	May affect, is not likely to adversely affect.
Yellow-billed cuckoo (Coccyzus americanus)	USFWS T w/ Proposed CH;	Uses wooded habitat with dense cover and water nearby, including woodlands with low, scrubby vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes.	Unlikely to occur in the project area due to lack of suitable habitat.	No effect.
Southwestern willow flycatcher (Empidonax traillii extimus)	USFWS E w/CH; State E	In New Mexico, is known to breed only along the Gila River and the Rio Grande. Associated with moist riparian areas throughout the year. Breeding habitat requirements vary by region. In migration, may be associated with willows *(Salix sp.)* along ditches, cottonwood *(Populus sp.)* woodland, and saltcedar *(Tamarix sp.)* stands.	Unlikely to occur in the project area due to lack of suitable habitat.	No effect.
American peregrine falcon (*Falco peregrinus anatum*)	State T	Found in New Mexico year-round. All nests in New Mexico are found on cliffs. In migration and during winter months, New Mexico's peregrine falcons are typically associated with water and large wetlands.	Unlikely to occur in project area due to lack of large water bodies and large wetlands.	No impact.

Table 4.5. Federally Listed and State Special-status Species for Los Alamos County (Contin.)

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Bald eagle (Haliaeetus leucocephalus alascanus)	State T	Occurs in New Mexico year-round. Breeding is restricted to a few areas mainly in the northern part of the state along or near lakes. In migration and during winter months, the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog (Cynomys sp.) colonies. Typically perches in trees.	Unlikely to occur in the project area due to the lack of abundant water and prairie dog colonies.	No impact.
Broad-billed hummingbird (Cynanthus latirostris magicus)	State T	Migratory species. Breeds in Guadalupe Canyon in southwestern New Mexico and rarely found in canyons of the Peloncillo Mountains. Accidental anywhere else in the state. Occupies desert riparian deciduous woodland (especially of cottonwoods) and marshes. Occurs where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins.	Unlikely to occur in the project area due to the lack of desert riparian forest woodlands.	No impact.
Gray vireo (Vireo vicinior)	State T	Strongly associated with piñon-juniper and scrub oak habitats. Distributed mainly across the western two-thirds of the state. Prefers gently sloped canyons, rock outcrops, ridgetops, and moderate scrub cover.	May occur. Preferred habitat exists in the easternmost Horse Stable Bench project area.	May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability.
Violet-crowned hummingbird (Amazilia violiceps)	State T	In the United States, the species is found primarily in riparian woodlands at low to moderate elevations (NMDGF 2016; Baltosser 1986). In Guadalupe Canyon, these woodlands are characterized by Fremont cottonwood *(Populus fremontii),* Arizona sycamore (*Platanus wrightii),* Arizona white oak *(Quercus arizonica),* and netleaf hackberry *(Celtis reticulata).*	Unlikely to occur. The project area is outside the species' typical range in New Mexico.	No impact.
Mammals				
New Mexico meadow jumping mouse (*Zapus hudsonius luteus*)	USFWS E w/CH	Occupies mesic habitats in lowland valleys and along montane streams and in riparian zones along permanent waterways. It is also found along irrigation ditches and in wet meadow areas within some river floodplains.	Unlikely to occur due to lack of suitable habitat.	No effect.

Table 4.5. Federally Listed and State Special-status Species for Los Alamos County (Contin.)

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Spotted bat (Euderma maculatum)	State T	In New Mexico, spotted bats have been collected in areas near cliffs, including piñon-juniper woodlands and from streams or water holes within ponderosa pine or mixed coniferous forest. It has also been collected over cattle tanks in a meadow surrounded by mixed coniferous forest and near a ridge with cliffs and limestone outcroppings. The spotted bat is usually captured around a water source, including desert pools or cattle tanks. It also may use rivers or desert washes as travel corridors.	May occur. The project area contains suitable ponderosa pine woodlands and rocky outcrops that may serve as suitable roosting habitat for the species.	May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability.
Plants				
Wood lily (Lilium philadelphicum)	State E	Common in high meadows of the mountain west and some intact tall-grass prairies of the Great Plains. Occurs in riparian, ponderosa pine, mixed conifer, and spruce-fir forests. The wood lily can be found in canyons above 7,500 feet (2,285 m) amsl and usually occurs in areas of old-growth conifer forests.	May occur. The project area contains suitable ponderosa pine woodlands and rocky outcrops that may serve as suitable habitat for the species.	May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability.

E = Endangered. T = Threatened. w/CH = with Critical Habitat. Sources: USFWS 2017b, USFWS 2017c

State E = Endangered. State T = Threatened. Except where otherwise noted, range or habitat information for wildlife species is taken from the BISON-M website (BISON-M 2017), the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2017a), Cartron (2010), and the New Mexico Rare Plant Technical Council (1999).

After evaluating habitat characteristics in the project area, only two federally listed species—the Mexican spotted owl *(Strix occidentalis lucida)* and the Jemez Mountains salamander *(Plethodon neomexicanus)*—and three state special-status species—the wood lily *(Lilium philadelphicum)*, the gray vireo *(Vireo vicinior)*, and the spotted bat *(Euderma maculatum)*—were found to have potential habitat and thus may occur in the project area. These five species are analyzed below. FEMA has made a no effect determination for the reaming three federally listed species (Yellow-billed cuckoo; Southwestern willow flycatcher; and New Mexico meadow jumping mouse) and their critical habitat under Section 7 of the ESA.

Jemez Mountains Salamander (*Plethodon neomexicanus*)

The Jemez Mountains salamander typically occurs on shady, wooded areas in mixed-conifer habitat with abundant rotted logs and surface rocks at elevations between 7,200 and 11,250 feet (2,195–3,429 m) amsl. Such areas are characterized by conifers, including Douglas fir, blue spruce, Engelmann spruce, and white fir (Degenhardt et al. 1996; NMDGF 2016; Stebbins 2003). Jemez Mountains salamanders have also been found in stands of quaking aspen and meadows at high elevation (Hathcock et al. 2015). The salamander is slender and elongate, and it possesses footwebbing and a reduced fifth toe. This salamander is a member of the family Plethodontidae, is strictly terrestrial, and does not use standing surface water for any life stage. Respiration occurs through the skin, which requires a moist microclimate for gas exchange.

The Jemez Mountains salamander spends much of its time below the surface, under surface litter, and in fallen logs and is rarely observed on the surface. When observed, it is most often encountered under and

inside well-rotted logs or under rocks when it is warm and wet. Old talus slopes are important types of cover for this species, especially those with a good covering of damp soil and plant debris (Degenhardt et al. 1996; NMDGF 2016; Ramotnik and Scott 1988). This species is usually present in its habitat year-round and spends much of its life underground. However, it may be found on the surface July through September when conditions are suitable. The Villa Bench project area is approximately 1.25 miles (2.01 km) west of the nearest designated USFWS critical habitat is for the Jemez Mountains salamander.

Mexican Spotted Owl (*Strix occidentalis lucida*)

Mexican spotted owls are a resident species in the forested mountains of New Mexico, breeding from March through August. They inhabit dense mixed-conifer habitat zones with complex vegetation structure. They hunt at night for prey, including small mammals, lizards, and insects. The Mexican spotted owl population fluctuates in response to prey availability. Therefore, prey habitat, such as fallen logs, are an essential component of the Mexican spotted owl habitat. Mexican spotted owls prefer to nest in mature or late successional mixed-conifer habitats associations with a dense understory. They are cavity nesters, preferring holes already excavated in snags or other large trees by woodpeckers. They require large patches of preferred habitat, with most territories ranging from 2.7 to 4.2 square miles (7.0–10.9 km^2). Adult Mexican spotted owls are faithful to their nesting sites, returning year after year to breed in the same location. The nearest designated USFWS critical habitat for the Mexican spotted owl is approximately 4.50 miles (7.24 km) southwest of the of the Villa Bench project area (USFWS 2004, 2017c).

Wood Lily (*Lilium philadelphicum*)

The wood lily is one of the widest ranging of the true lily species and is common in high meadows of the Mountain West and some intact tall-grass prairies of the Great Plains. The presence of the wood lily has been documented in Los Alamos County, Bandelier National Monument, and Santa Fe National Forest lands (Foxx et al. 1998; Keller 2011). The wood lily can be found in canyons above 7,500 feet (2,285 m) amsl and usually occurs in areas of old-growth, mixed-conifer forests.

Spotted Bat (*Euderma maculatum*)

Spotted bats are known to occur in many habitats, including riparian communities, pinyon-juniper woodlands, ponderosa pine and spruce-fir forests, and open semi-desert shrublands between 3,900 and 10,600 feet (1,189–3,231 m) amsl (Findley et al. 1975; NMDGF 2016). Rocky cliffs are necessary to provide suitable cracks and crevices for roosting, as is access to water. The bat shows apparent seasonal changes in habitat, occupying ponderosa pine woodlands in the reproductive season and lower elevations at other times of the year (BISON-M 2017). The spotted bat has been found in New Mexico from the vicinity of the Rio Grande valley westward, occurring most regularly in the Jemez, San Mateo, and Mogollon Mountains and on Mt. Taylor, which are presumably key habitat areas (Fenton et al. 1983, 1987). There are additional highland records from near Ghost Ranch (Rio Arriba County) and Lake Roberts (Grant County), as well as single lowland records from Aztec (San Juan County), Albuquerque (Bernalillo County), and Mesilla Park (Doña Ana County) (NMDGF 2016). Spotted bats have been documented in Los Alamos National Laboratory property along cliffs on the north side of Los Alamos Canyon and Sigma Mesa (Bogan et al. 1998; Schoenberg 2014).

Gray Vireo *(Vireo vicinior)*

The gray vireo is designated as Threatened in New Mexico, where it is found mostly in the western part of the state in mid-elevation juniper woodlands, scrublands, foothills, and mesa habitats. It is occasionally found in areas with oaks or pinyons with a well-developed grass component. It is considered rare to

uncommon locally throughout the state (Hubbard 1978; NMDGF 1988; 2016). Gray vireos breed in pinyon pine-Utah juniper woodlands, oneseed juniper savannas, mixed juniper-oak woodlands, and desert riparian communities (NMDGF 2016; DeLong and Williams 2006).

4.4.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus there would be no direct impacts to special status species or their habitat because the project would not be implemented. However, the existing condition and potential risks to wildlife habitat from a wildfire event would also remain. Impacts to special status species from a wildfire could include loss of habitat and wildlife displacement, injury, or mortality.

4.4.2.2 PROPOSED ACTION ALTERNATIVE

Jemez Mountains Salamander (*Plethodon neomexicanus*)

The Jemez Mountains salamander is not known to exist within the project area. However, relic populations can be found on wet, north-facing slopes in ponderosa and mixed-conifer forests of the Jemez Mountains. The two project areas with conditions that best meet the criteria and may contain habitat for the Jemez Mountains salamander are Walnut Bench and North Horse Stable Bench. One individual Jemez Mountains salamander was observed in 2010, approximately 0.28 mile (0.45 km) southeast of the Walnut Bench project area (personal communication, Charles D. Hathcock, Los Alamos National Laboratory, via email with Matt McMillan, SWCA, September 29, 2017).

While Jemez Mountains salamanders are not known to occur in the project area, the project area has not been surveyed to confirm or deny their presence. Hence, to reduce the potential for impacting salamanders that may be present in the two project areas that best meet salamander habitat conditions, Walnut Bench and North Horse Stable Bench project areas, a seasonal work restriction would be applied from June 15 through October 30 (i.e., the season when salamanders are most likely to be active on the surface). Seasonal restrictions will avoid any direct effects to the species if present in these two project areas.

Thinning vegetation would reduce the potential for a severe wildfire to impact the salamander habitat in and around the project area. Additionally, the Proposed Action includes actions to promote salamander habitat, such as retaining Douglas-fir trees, developing water holding ponds to promote moist habitat condition,; and dispersing wood chips to help retain ground moisture.

Per Appendix A Biological Assessment and Appendix B USFWS Concurrence Letter, the Proposed Action *may affect, is not likely to adversely affect* the Jemez Mountains salamander as there would be no treatments conducted in the North Horse Stable Bench and Walnut Bench project areas from June 15 through October 30. In addition, the project conservation measures outlined in Section 3.2.2.2 will minimize impacts to the salamander and its habitat. The Proposed Action will have *no effect* on critical habitat of the Jemez Mountains salamander because the project area is not within designated critical habitat for the Jemez Mountains salamander.

Mexican Spotted Owl (*Strix occidentalis lucida*)

No suitable nesting habitat was identified within the project area during the biological survey; however, owls are known to occur within Pueblo Canyon and may utilize the project area for foraging. Live and dead Mexican spotted owls have been documented at Los Alamos National Laboratory in the canyons south of the Villa Bench project area (personal communication, Charles D. Hathcock, Los Alamos

National Laboratory, via email with Matt McMillan, SWCA, September 29, 2017). Villa Bench is approximately 4.5 miles southwest of the closest designated critical habitat for the Mexican spotted owl. The Villa Bench project area is 17.9 acres in size, which is significantly smaller than the Mexican spotted owl's preferred large patch habitat size that ranges from 1,728 to 2,688 acres. Combined, the seven proposed project areas total 114 acres.

Sights and sounds of humans are common in the project area from the year-round recreational trail use. Noise associated with tree thinning equipment (i.e., chainsaws and wood chipper), may disturb owls in the immediate vicinity of project areas. However, noise disturbance would be temporary, lasting up to three weeks at each project area. During treatments, any resident Mexican spotted owls could migrate to areas of suitable habitat in the vicinity of the project areas to avoid disturbance and noise.

To the extent possible the County Fire Department would limit thinning during the migratory bird breeding season (March–August); however, treatments are currently planned to be implemented year-round in order to complete the project within the two-year project grant period. If work must take place during Mexican spotted owl breeding and nesting season from March 1 to August 31, nesting surveys must be conducted by a permitted biologist prior to project implementation to identify any occupied nests and establish avoidance buffers until the young have fledged.

Per Appendix B - USFWS Concurrence Letter, the Proposed Action *may affect, is not likely to adversely affect* the Mexican spotted owl. To avoid take of individual owls during the bird breeding season, surveys would be conducted by a permitted biologist prior to project implementation. The Proposed Action will have *no effect* on critical habitat of the Mexican spotted owl because the project area is not within designated critical habitat for the Mexican spotted owl.

Wood Lily (*Lilium philadelphicum*)

The project area contains ponderosa pine woodlands and rocky outcrops that may serve as suitable habitat for wood lilies; however, no lilies were found during the biological survey in August 2017. Suitable habitat should be protected where possible from disturbance activities that would impact the habitat. The proposed project may impact individual wood lilies, but it is not likely to result in a trend toward federal listing or loss of viability.

Spotted Bat (*Euderma maculatum*)

The project area contains ponderosa pine woodlands and rocky outcrops that may serve as suitable roosting habitat for the species. Based on the Proposed Action, potential impacts to the spotted bat may result from tree thinning and noise generated by chainsaws and the wood chipper. Tree removal activity may negatively impact the roosting sites of the species. However, as described in Section 2.1, thinning treatments would retain 50 to 150 trees per acre and no spruce trees would be cut. In general, treatments would remove understory shrubs and trees 9 inch dbh or less. Noise may disturb roosting bats in the immediate project areas; however, noise disturbance would be temporary as the project areas are less than 25 acres in size each, and thus thinning activities would be completed during the daytime hours. Therefore, the proposed project may temporarily impact individual spotted bats, but it is not likely to result in a trend toward federal listing or loss of viability.

Gray Vireo *(Vireo vicinior)*

The project area contains some pinyon-juniper woodlands, which the species prefers for nesting; however, pinyon-juniper makes a very small portion of the proposed project area, and there is abundant habitat east of the project area. In general, treatments would remove understory shrubs and trees 9 inch dbh or less. Tree removal activity may negatively impact any nesting sites of the species because

treatments would remove understory shrubs and trees 9 inch dbh or less. Noise may disturb nesting gray vireos in the immediate project areas; however, noise disturbance would be temporary as the project areas are less than 25 acres in size each. Therefore, the proposed project may temporarily impact individual gray vireos, but it is not likely to result in a trend toward federal listing or loss of viability.

4.4.3 Wildlife

The Rocky Mountain Lower Montane-Foothill Shrubland ecoregion (Griffith et al. 2006) provides habitat for a variety of wildlife species, primarily in the forested areas. The project area is adjacent to residential neighborhoods and schools, and thus wildlife species present would be influenced by residential activities. SWCA biologists detected 31 bird species and six mammals during the August 2017 survey of the project area (Table 4.6).

Table 4.6. Wildlife Detected during Biological Surveys, August 2017

Common Name	Scientific Name
Birds	
Acorn woodpecker	*Melanerpes formicivorus*
American crow	*Corvus brachyrhynchos*
American robin	*Turdus migratorius*
Barn swallow	*Hirundo rustica*
Black-chinned hummingbird	*Archilochus alexandri*
Brown creeper	*Certhia americana*
Bushtit	*Psaltriparus minimus*
Canyon towhee	*Melozone fusca*
Chipping sparrow	*Spizella passerina*
Common raven	*Corvus corax*
Cordilleran flycatcher	*Empidonax occidentalis*
Evening grosbeak	*Coccothraustes vespertinus*
Green-tailed towhee	*Pipilo chlorurus*
House wren	*Troglodytes aedon*
Lesser goldfinch	*Spinus psaltria*
Mountain chickadee	*Poecile gambeli*
Mourning dove	*Zenaida macroura*
Pine siskin	*Spinus pinus*
Plumbeous vireo	*Vireo plumbeus*
Pygmy nuthatch	*Sitta pygmaea*
Rock pigeon	*Columba livia*
Rufous hummingbird	*Selasphorus rufus*
Stellar's jay	*Cyanocitta stelleri*
Spotted towhee	*Pipilo maculatus*
Turkey vulture	*Cathartes aura*
Western bluebird	*Sialia mexicana*
Western tanager	*Piranga ludoviciana*

Table 4.6. Wildlife Detected during Biological Surveys, August 2017 (Continued)

Common Name	Scientific Name
Birds (Contin.)	
Western wood-pewee	*Contopus sordidulus*
White-breasted nuthatch	*Sitta carolinensis*
Woodhouse's scrub-jay	*Aphelocoma woodhouseii*
Zone-tailed hawk	*Buteo albonotatus*
Mammals	
American black bear	*Ursus americanus*
Coyote*	*Canis latrans*
Least chipmunk	*Tamias minimus*
Mountain cottontail	*Sylvilagus nuttallii*
Mule deer†	*Odocoileus hemionus*
Rock squirrel	*Spermophilus variegatus*

Note: All species detected via direct observation unless noted otherwise.

* detected via mounds and/or nests

† detected via tracks and/or scats

In addition to recording wildlife and plants observed during the surveys, habitat was evaluated for the possible occurrence of active and inactive bird nests. In total, 31 bird species, several inactive stick nests, and more than 100 inactive passerine nests were observed during SWCA's field survey (see Table 4.6). Most of the species observed during SWCA's survey occur in northern New Mexico during the breeding season and may nest in trees or in shrubs documented in the project area, such as Gambel oak.

The Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. §§ 703–711) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations. The USFWS consults on issues related to migratory birds. The nesting season for migratory birds is generally from March through August, depending on the species and location.

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the BGEPA and the MBTA. In New Mexico, the bald eagle is found typically in association with water and nests only at a few undisclosed locations along lakes or streams in the northern and western portions of the state (Stahlecker and Walker 2010). The golden eagle nests primarily on rock ledges or cliffs, less often in large trees at elevations ranging from 4,000 to 10,000 feet (1,219–3,048 m) amsl, and is typically found in mountainous regions of open country, prairies, arctic and alpine tundra, open wooded areas, and barren areas. In New Mexico, bald eagles prey on fish but also on mammals, especially prairie dogs. Golden eagles feed mainly on small mammals, as well as invertebrates, carrion, and other wildlife (BISON-M 2017).

4.4.3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken to directly impact wildlife or their habitat. However, the potential risks to wildlife and their habitat from a wildfire event would also remain. Wildlife impacts from a wildfire could include loss of habitat and wildlife displacement, injury, or mortality.

4.4.3.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, wildlife would be temporarily displaced by the physical presence of thinning activities in the area, including noise from chainsaws and the wood chipper, or the presence of humans. However, these impacts would not be permanent and should not occur for long enough to deter any wildlife from returning. Direct injury or mortality of wildlife during commencement of vegetation removal is not anticipated.

It is the County's goal to cause minimal disruption to all wildlife in the project area, including migratory birds, when conducting thinning treatments. However, due to the two-year timeframe for implementing the project (per the grant agreement), as well as other project constraints such as weather and safe working conditions, vegetation removal may occur year-round. As stated in Section 3.2.2 project conservation measures, should any vegetation removal occur during the breeding bird season, pre-treatment nesting surveys would be required to identify any occupied nests and establish avoidance buffers to prevent impacts to species protected under the MBTA. In addition, larger-diameter dead trees and snags that provide sheltering, nesting, roosting, and feeding habitat for cavity nesting and migratory bird species, would be retained to the maximum extent possible, while still achieving the project objectives.

The Proposed Action is not anticipated to cause take of individual bald or golden eagles, their nests, or eggs, because these species are not common in the area due to lack of suitable habitat and prey. Lastly, the Proposed Action is expected to benefit wildlife by improving habitat conditions that are currently threatened and could be lost in the event of a wildfire.

4.5 Cultural Resources

This section provides an overview of the affected area and potential environmental effects of the No Action and Proposed Action Alternatives on historic properties and American Indian/Native resources.

4.5.1 Historic Properties

Section 106 of the National Historic Preservation Act (NHPA) requires that activities occurring on federal lands, or those that require federal permits or use federal funds, undergo a review process to consider cultural resources that are or may be eligible for listing in the National Register of Historic Places (NRHP). A records search revealed that 26 previous cultural resource surveys have been conducted within 0.5 km (0.3 mile) of the project area, resulting in 31 previously recorded sites.

SWCA conducted a 100% (intensive) cultural resources pedestrian inventory on August 21 and 22, 2017. SWCA's intensive cultural resources inventory resulted in no newly identified archaeological sites. Of the previously recorded sites, only two were relocated during the survey. Reasons for not relocating the other six sites are attributed to the poor quality of the geospatial information submitted at the time of original recording and database entries; sites being altered from two decades of modern use, particularly active formal and informal recreation trails in the project area; and removal of historic debris resulting from local clean-up efforts. Segments not relocated were recommended not eligible by SWCA. Ten newly recorded isolate occurrences were also recorded. Isolated occurrences are by definition not eligible for the NRHP.

Table 4.7 below summarizes the sites, eligibility and management recommendations for the six sites within the project area and that were relocated. Some of these sites were entirely within the survey area, while some sites only included segments within the survey area.

Table 4.7. Site Summary, Eligibility, and Management Recommendations

Resource No.	Relocated	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Management Recommendation
LA 89103	No	Transportation/Communication. Anglo-/Euro-American: U.S. Territorial 1890 to present	Segment Individually Not Eligible; Segment is Non-contributing to SR 1848 or to SR 1827	None
LA 132620	Yes	Prehistoric (Ancestral Puebloan, A.D. 1100–1600)	Not Eligible	None
LA 132621	No	Transportation/Communication. Anglo-/Euro-American: U.S. Territorial 1890 to present	Segment Individually Not Eligible; Segment is Non-contributing to SR 1850 or to SR 1827	None
LA 135430	Yes	Transportation/Communication. Anglo-/Euro-American: U.S. Territorial 1890 to present	Segment Individually Not Eligible; Segment is Non-contributing to SR 1848 or to SR 1827	None
LA 155822	No	Transportation/Communication. Pueblo III to IV (A.D. 1100 to 1600)	Segment Individually Not Eligible	None
LA 155823	No	Transportation/Communication. Pueblo III to IV (A.D. 1100 to 1600)	Segment Individually Not Eligible	None

4.5.2 American Indian/Native

The NHPA requires that Federal agencies consult with tribal groups with a designate interest in their action as consulting parties to the Section 106 process, whether or not the undertakings are on tribal lands. The Proposed Action would not be implemented on any tribal lands; however, the following tribes have a designated interest in the project area, and thus were consulted with in the formal government to government consultation process: the Comanche Nation, Navajo Nation, Pueblo of Cochiti, Pueblo of Jemez, Ohkay Owingeh (a.k.a. San Juan Pueblo), Pueblo of San Ildefonso, Pueblo of Santa Clara, Pueblo of Tesuque, and the Hopi Tribe.

As part of the Section 106 formal government to government consultation process, FEMA submitted the Cultural Resources Survey Report for the Los Alamos Wildfire Mitigation and Public Education Project to the above listed tribes and the State Historic Preservation Office (SHPO) on October 24, 2017.

During the 30-day formal comment period, FEMA received a response from SHPO, the Navajo Nation, and the Comanche Nation. To date these are the only responses received about the proposed project. The Comanche Nation and Navajo Nation responses stated no concern/no identification of sites within the proposed project area.

The SHPO did not concur with the determinations of eligibility for the sites listed in Table 4.7 above. Their reasons are documented in Appendix D, Tribal Consultation and SHPO Consultation Correspondences. In summary, SHPO did not agree with the "not eligible" recommendations by SWCA for sites not located during the SWCA survey that previously had been recommended "eligible." However, SHPO did concur that there would be no adverse effect to historic properties based on the Proposed Action description and inclusion of the discovery clause, which is listed in the project conservation measures in Section 3.2.2. A record of the Section 106 consultation and correspondences is provided in Appendix D.

4.5.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken to directly impact cultural resources. Because no federal activity would occur, no requirement for compliance with Section 106 of the NHPA exists under the No

Action Alternative. Additionally, the potential risks to cultural and historic resources from a wildfire event would also remain.

4.5.2.2 PROPOSED ACTION ALTERNATIVE

Per the concurrence letters received from tribes and SHPO, the methods used to implement the Proposed Action, along with the conservation measure that would halt all actions in the event of a discovery during implementation, would have no adverse effects to historic properties in the project areas.

4.6 Socioeconomic Resources

This section provides an overview of the affected area and potential environmental effects of the No Action and Proposed Action Alternatives to environmental justice, visual resources, traffic and noise, and health and public safety.

4.6.1 Environmental Justice

Environmental justice is defined by EO 12898 (59 Federal Register 7629) and CEQ guidance (CEQ 1997), and states that demographic information should be used to determine whether minority and/or low-income populations that are present within the proposed project area could be potentially affected by the Proposed Action.

Based on the U.S. Census Bureau's estimates, the total population for Los Alamos County in 2016 was 18,147. Table 4.8 compares Los Alamos County and state of New Mexico population and income statistics. The U.S. Census Bureau poverty threshold for a family of four (two adults and two children) in 2015 was $24,036 (U.S. Census Bureau 2015). The median household in Los Alamos County between 2012 and 2016 was $105,902, which is significantly higher than the state of New Mexico median household income and significantly higher than the United States average, which was $55,322.

Table 4.8. Population, Median Household Income, and Poverty Percentage for Los Alamos County and New Mexico, 2012–2016 Estimates

Statistic	Los Alamos County	New Mexico
Population	18,147	2,088,070
Median household income	$105, 902	$45,674
Persons in poverty (percent)	4%	19.8%

Source: U.S. Census Bureau 2016a, 2016b.

CEQ (1997) defines the term "minority" as persons from any of the following groups: black, Asian or Pacific Islander, American Indian or Alaskan Native, and Hispanic. Table 4.9 provides the racial composition in Los Alamos County, which is predominantly white.

Table 4.9. Race for Los Alamos County and New Mexico, 2012–2016

Race	Los Alamos County	New Mexico
White alone	89.0%	82.6%
Black or African American alone	1.0%	2.5%
American Indian and Alaska Native alone	1.5%	10.6%

Asian alone	6.0%	1.7%
Native Hawaiian and other Pacific Islander	0.1%	0.2%
Two or more races	2.4%	2.5%

Source: U.S. Census Bureau 2016a, 2016b.

4.6.1.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads within the project areas and no actions would be taken. Because no federal activity would occur, no requirement for compliance with EO 12898 exists. If a wildfire were to occur, there would be impacts to all residents in the area regardless of their demographics.

4.6.1.2 PROPOSED ACTION ALTERNATIVE

The Proposed Action would not disproportionately affect minority or poverty population because less than 29% of County residents are minorities and only 4% are living at the poverty level. The minority population and percentage of persons living in poverty is significantly less than that of the rest of the state of New Mexico and, moreover, the County's median household income is more than four times that of the poverty income level. The minority and low-income populations in the County would benefit the same as everyone from the Proposed Action.

4.6.2 Visual Resources

The project area is primarily composed of ponderosa pine forest with open grassy meadows between tree stands. The understory is composed of gray alder, Gambel oak, and alderleaf mountain mahogany. The County has developed an extensive trail system used by horseback riders, trail runners, and hikers, as well as for bird watching and overall enjoyment of the surrounding vistas. These outdoor opportunities are valued by locals and visitors alike and play a significant role in the residents' quality of life. The project area is adjacent to residential neighborhoods, and the proposed thinning of vegetation would be visible to adjacent properties (including residences, schools, and businesses), as well as to anyone using the County Open Space trail network.

4.6.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken to directly impact visual resources. Additionally, the potential risks to visual resources from a wildfire event would also remain. Visual resource impacts from a wildfire include burned landscapes and depending on the severity could include loss of all vegetation in the project area and surrounding areas. These impacts could be long lasting.

4.6.2.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, visual changes would be apparent during project implementation and for approximately 2 years after the treatments have been completed. People using the trail system or living adjacent to the project areas would observe a change in appearance from the removal of underbrush and the openings between trees, woodchips dispersed on the ground, and logs placed to create wildlife holding ponds and to reduce erosion on the steep canyon slopes. These thinning activities would be noticeable, but would not significantly change the overall appearance based on the thinning prescription to selectively thin trees and retain 50 to 150 trees per acre and 40% to 60% canopy cover. The visual impacts would be

mitigated by the project conservation measures, including retaining trees and snags along canyon rims to the maximum extent possible to provide privacy barriers between residential areas and adjacent public use areas.

4.6.3 Traffic and Noise

The Proposed Action would thin vegetation on County lands interspersed with residential areas and community centers. Thinning crews would likely travel to and from the project areas in two pickup trucks, one of which would tow the wood chipper. Access to each project area would use existing paved roads, and no new roads would be created.

Sounds that disrupt normal activities or that otherwise decrease the quality of the environment are designated as noise. Noise is a form of sound caused by pressure variations that the human ear can detect and is often defined as unwanted sound. Typical sources of noise in residential areas include local roadway traffic, aircraft, and neighborhood sources like lawnmowers, leaf blowers, etc. The unit used to describe the intensity of sound is the decibel. Audible sounds range from 0 decibels ("threshold of hearing") to about 140 decibels ("threshold of pain") (Occupational Safety and Health Administration [OSHA] 2013). For example, conversational speech is measured at about 55 to 60 dB whereas a band playing loud music may be as high as 110 dBA.

4.6.3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken to directly impact traffic patterns or noise levels in the project area relative to current conditions.

4.6.3.2 PROPOSED ACTION ALTERNATIVE

The two pickup trucks transporting fire crews to and from the project areas would not have a measurable or noticeable effect on traffic patterns in the area.

Noise from the Proposed Action would result from the chainsaws used to fell trees, the wood chipper, and fire department crews driving to and from the project areas. The operation of chainsaws (92 to 112 dB) and chippers (105 dB) used to implement the project would cause a short-term, temporary increase in noise levels in the vicinity of the project areas (OSHA 2013). To minimize noise disturbance impacts, thinning activities would be limited to occur between the hours of 8 a.m. to 6 p.m., and all equipment and machinery used would meet all applicable local, state, and federal noise control regulations. Impacts from increased noise from the Proposed Action would be minor and of short duration.

4.6.4 Public Health and Safety

The purpose and need for the project is to improve public health and safety by mitigating the wildfire hazard in the County. The project would thin vegetation to reduce the risk of a catastrophic fire and to mitigate impacts to infrastructure, utilities, residences, and life and property in general, as well as to minimize impacts to vegetation, habitat, water, and all natural and cultural resources in the area. Flash flooding after a large wildfire could contribute sediment and debris to area waterways that can damage structures, roads, and utilities critical to the safety and well-being of citizens in and around the area. The topography of the County has resulted in population centers developing along the fingerlike mesa tops separated by steep canyons. This has substantially increased concerns regarding the safety of people living in these areas if a catastrophic wildfire were to occur.

Access to the ends of the mesa tops is usually serviced by only one road in and out of each mesa top. The limited access and dispersed configuration of population centers hinders the ability for rapid emergency response during wildfire events. Given these challenges, a critical component to mitigating wildfire hazards in the County is to create and maintain defensible space around population centers and critical facilities and to educate the public to mitigate wildfire hazards.

4.6.4.1 NO ACTION ALTERNATIVE

Under the No Action Alternative FEMA would not provide funding to reduce fuel loads in the project area, thus no actions would be taken that would impact public health and safety. However, the potential risks from a wildfire event would also remain. Public health and safety risks that could result from a wildfire event include damage or loss of roads, utilities, homes, and businesses, as well as injury and even death to citizens. Wildfires can generate substantial amounts of fine particulate matter, which can affect the health of people breathing the smoke-laden air. Therefore, the health of people downwind from a wildfire, especially young children and people with lung disease or asthma, could be adversely affected. At close range, wildfires can generate substantial amounts of carbon monoxide, which can pose a health concern for frontline firefighters. Additionally, post-fire flooding events resulting from wildfires could endanger lives, structures, roads, bridges, water intakes, and water treatment facilities.

4.6.4.2 PROPOSED ACTION ALTERNATIVE

Use of chainsaws, hand saws, and the wood chipper during project implementation could result in bodily injury to thinning crew members and hearing impairments from equipment noise at close range. However, the County Fire Department would minimize the potential for accidents and hearing impacts, as well as impacts associated with the misuse of equipment by properly training all crew members and requiring the use of personal protective equipment and maintaining all equipment in safe working condition.

Under the Proposed Action, there would be beneficial impacts to public health and safety from thinning vegetation in the project area. Thinning vegetation would create a defensible space on County lands adjacent to residential areas and population centers. The defensible space would slow the pace at which the wildfire spread, limit the amount of fuels and thereby reduce the intensity of the burn, and reduce safety hazards so that the fire is more manageable for firefighters to suppress. In addition, the Proposed Action would include an education component, in which citizens would be informed on fire safety programs and receive home assessments so that they can minimize the risk to their homes and property from wildfire events. Additionally, the project conservation measures include measures to inform the public of scheduled treatments, so that they can plan accordingly. These measures include coordinating the timing of treatments with adjacent landowners and high use areas, such as the horse stables and people using the area trail systems and advertising the treatments through local media, posting signs, and on the fire department webpage.

5 SUMMARY TABLE

Mitigations and best management practices (BMPs) correlate with the treatment prescriptions in Section 3.2.1 and the project conservation measures found in Section 3.2.2 of this EA. Table 5.1 summarizes the impacts and mitigations by resource.

Table 5.1. Summary of Impacts and Mitigation

Affected Environment/ Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Soils and Geology	Soil compaction from wood chipper; soil erosion from vegetation removal	No/No	Conservation measures: 1, 8, 12 Treatment prescription: 4
Air Quality and Climate Change	Greenhouse gas emissions from burring hydrocarbon fuels associated with the use of vehicles, chainsaws, and the wood chipper	No/No	None
Water Quality	None	No/No	Conservation measures: 9
Wetlands	No impacts to wetland plants, soils, or the hydrologic function of wetlands or to water quantity downstream of the project area	Informed USACE of project; no permits required	Conservation measures: 2, 3, 4, 9
Floodplains	Erosion or accumulation of sediment and woody products deposited in the floodplain	8-Step process completed	Conservation measures: 2,3, 4, 8, 9
Vegetation	Minimal potential for introduction of non-native species and potential reduction in invasive species due to their removal during implementation.	No/No	Conservation measures: 6 Treatment prescription: 4, 9, 14
Threatened and Endangered Species and Critical Habitat.	No effect to the Yellow-billed cuckoo, Southwestern willow flycatcher, or New Mexico meadow jumping mouse. May affect, not likely to adversely affect the Jemez Mountains salamander and Mexican spotted owl. No effect to critical habitats. Long-term improvements to habitat conditions	Informal consultation with USFWS	Conservation measures: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 28 Treatment prescription: 4, 5, 10, 13
Wildlife	Impacts to habitat, nesting birds, displacement of wildlife, and long-term improvements to habitat conditions	NM Dept. of Game & Fish notified	Conservation measures: 10, 28 Treatment prescription: 4, 5, 10, 13
Historic Properties	None	Consultation with SHPO	Conservation measures: 17
American Indian/Native	None	Consultation with tribes	Conservation measures: 17
Environmental Justice	None		
Visual Resources	Change in appearance of project areas treated, reduced visual barrier between residences and open space areas	No/No	Treatment prescription: 12
Traffic and Noise	Noise from chainsaws and wood chipper	No/No	Conservation measures: 22, 23, 24, 26, 27
Public Health and Safety	Injury from accidents associated with equipment use, disturbance to adjacent residential areas and community centers, and county open space trails, beneficial impact associate with reduction in wildfire risk	No/No	Conservation measures: 21, 22, 23, 24, 25, 27, 28

6 CUMULATIVE IMPACTS

Cumulative effects are defined as "the impact on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Los Alamos County was chosen for the cumulative geographic scope for cumulative analysis.

Past and foreseeable projects within the County, including lands managed by the County, Los Alamos National Laboratory, and private lands considered in this analysis, include developments (such as clearing lands to construct buildings for residential and business development and expanding utilities, roads, and trails) and vegetation management activities including vegetation thinning, prescribed burning, and invasive species treatments. While private development activities will continue to occur in the WUI, the amount and rate of development are difficult to foresee. These activities would be required to comply with applicable laws and regulations.

Developments generally include removing or clearing vegetation and the potential for invasive species to become established due to the ground disturbance. However, the County also has an active weed management program and successful treatments would allow for the re-establishment of native vegetation, thus having a long-term beneficial impact.

Vegetation management activities throughout the County have a cumulative impact regarding the location and connectivity of fuel breaks and fuel reduction areas across the County and bigger landscape. Vegetation management activities would construct fuel breaks, create defensible space, and reduce fuel loads that would influence how a wildfire would advance, the rate it would spread and advance, and the areas from which firefighters could marshal resources to fight and control a wildfire (FEMA 2012a).

Impacts to wetlands, drainages, soils, vegetation and invasive species, and wildlife and special status species would depend on the placement and type of surface disturbance, the type of vegetation and plant species present, and the hydrologic conditions within the individual project sites. Generally, soil erosion and sedimentation of local drainages would be expected, especially when storm events occur during construction of the future actions.

Roads, developments, and vegetation thinning activities affect wildlife, migratory birds, and special status species through decreasing available forage and habitat and causing habitat alteration and fragmentation. Loss of habitat and fragmentation breaks the available habitat into smaller and smaller pieces, which can lead to displacement and physiological stress in wildlife species. Fragmentation results in indirect habitat loss and degradation. Wildlife species would have to expend an increased amount of energy to avoid disturbed areas or when experiencing alarm due to human presence, traffic, and associated noise.

No cumulative effect to cultural or historic resource sites would occur because no cultural or historic sites would be impacted by the Proposed Action.

Similar to the direct impacts for visual resources, vegetation treatments throughout the County would be noticeable in the short term (lasting up to 2 years). However, the long-term impacts would result in healthier vegetation conditions that sustain visual resources and create desired vistas. Visual impacts from residential and business developments throughout the County would be in compliance with County building code standards and within areas zoned for development.

7 AGENCY COORDINATION, PUBLIC INVOLVEMENT, AND PERMITS

FEMA is the lead federal agency for conducting the NEPA compliance process for the proposed vegetation management project. As the lead agency, FEMA expedites the preparation and review of NEPA documents, responds to the needs of residents surrounding the treated lands, meets the spirit and intent of NEPA, and complies with all NEPA provisions.

Public scoping for the project began in September 2017. Notice of the proposed project was made to the public through public service announcements, a letter emailed to stakeholders, notice posted on the

Los Alamos County Fire Department webpage, and at a public meeting. The stakeholder letter with a map of project area was emailed on September 15, 2017, to 38 contacts, including local, state, and federal government agencies and interested individuals. Public service announcements were made available on September 12, 2017, to the *Los Alamos Daily Post*, *Los Alamos Monitor*, the local television channel (PAC 8), and the KRSN radio station. Both newspapers wrote articles about the project. The webpage and announcements included information about the proposed project and how to comment and announced the opportunity to attend a public meeting to learn more about the project.

A public meeting was hosted by the County Fire Department on September 20, 2017, from 5:30 to 7:30 p.m. at the Los Alamos Fire Department Administration Building in the Training Room, located at 999 Central Avenue in Los Alamos. The meeting was facilitated by SWCA and included a brief PowerPoint presentation, followed by a question and answer session. A copy of the presentation is provided in Appendix D. In general, the public expressed support for the project. There were questions and discussion about whether the thinning prescription encouraged development of younger trees to replace older dying trees, as well as a discussion about past treatments, mitigating impacts to the horses boarded at the horse stables, and questions and suggestions for coordinating scheduled treatments with adjacent landowners and user groups. Three comment letters were received between September 15 and October 13, 2017. All public scoping materials are provided in Appendix D, including the public service announcement, scoping letters, newspaper articles, and public comment letters.

Nine tribes have a designated interest in the general project area: the Comanche Nation, Navajo Nation, Pueblo of Cochiti, Pueblo of Jemez, Ohkay Owingeh (a.k.a. San Juan Pueblo), Pueblo of San Ildefonso, Pueblo of Santa Clara, Pueblo of Tesuque, and the Hopi Tribe. FEMA initiated formal consultation with these tribes and SHPO on October 12, 2017, via a letter mailed and each tribe and SHPO, along with a copy of the Cultural Resource Survey Report. FEMA received comments from two of the tribes and SHPO during the 30-day consultation period. A concurrence letter from SHPO was received on November 16, 2017 (see Appendix C).

FEMA initiated informal consultation with the USFWS through a letter and copy of the Biological Assessment mailed on November 20, 2017. A concurrence letter from USFWS was received on January 17, 2018 (see Appendix B).

A public notice regarding the availability of the Draft EA will be published in the local paper. The public notice will state that information about the proposed action, including this Draft EA, is available at a physical location open to the public within the project area. The notice will invite the public to submit their comments about the proposed action, potential impacts, and proposed mitigation measures so that they may be considered and evaluated. FEMA will consider and respond to all public comments in the Final EA. If no substantive comments are received, the Draft EA will become final, and a Finding of No Significant Impact (FONSI) will be issued for the project.

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10 APPENDICES

Appendix A: Biological Assessment
Appendix B: Record of U.S. Fish and Wildlife Service Consultation and Correspondences
Appendix C: State Historic Preservation Office and Tribal Consultation Correspondences
Appendix D: Public Scoping Notices
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Appendix F: Public Scoping Comments
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APPENDIX A
Biological Assessment

Biological Assessment for the Los Alamos County Wildfire Mitigation Project, Los Alamos County, New Mexico

Prepared for

U.S. Fish and Wildlife Service

On behalf of

Federal Emergency Management Agency

Prepared by

SWCA Environmental Consultants

December 2017

BIOLOGICAL ASSESSMENT FOR THE LOS ALAMOS COUNTY WILDFIRE MITIGATION AND PUBLIC EDUCATION PROJECT LOS ALAMOS COUNTY, NEW MEXICO

Prepared for
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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
amsl	above mean sea level
BA	biological assessment
BISON-M	Biota Information System of New Mexico
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cm	centimeters
County	Los Alamos County
CWPP	Community Wildfire Protection Plan
dbh	diameter breast height
EA	environmental assessment
EMNRD	New Mexico Energy, Minerals, and Natural Resources Department
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
HMGP	Hazard Mitigation Grant Program
km	kilometer(s)
m	meter(s)
MBTA	Migratory Bird Treaty Act of 1918
NEPA	National Environmental Policy Act of 1969
NHD	National Hydrography Dataset
NMDGF	New Mexico Department of Game and Fish
OHWM	ordinary high-water mark
PL	Public Law
SWCA	SWCA Environmental Consultants
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
WUI	wildland urban interface

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1 INTRODUCTION

The Los Alamos County Fire Department has proposed the implementation of a technical wildland fire hazardous fuels mitigation project including planning, assessing, and prioritizing a wildland fire hazardous fuels reduction prescription on forested county lands within the wildland urban interface (WUI) areas of the Los Alamos Community Wildfire Protection Plan (CWPP). The main goal of the project is to reduce the threat of catastrophic wildfire, protect the lives and safety of citizens and firefighters, create defensible space around residential areas and critical facilities, and to promote ecosystem health. Specifically, the mitigation project would thin vegetation on approximately 113.92 acres (46.1 hectares) of land managed by Los Alamos County (County) and would conduct home assessments on adjacent private lands that are within the Home Ignition Zone in Los Alamos County, New Mexico (Figure 1.1). The areas identified to be treated through the mitigation project are all within the WUI and would promote defensible space from a wildfire threat for approximately 750 residential homes, as well as for two schools, and the Los Alamos National Laboratory Pueblo Complex.

Los Alamos County is located at 7,355 feet (2,242 meters [m]) above mean sea level (amsl), at the base of the Pajarito Mountains in north-central New Mexico. Los Alamos is the smallest county in New Mexico at 109 square miles (282 square kilometers [km]), and is surrounded by National Forest, National Park, other federal lands, and Pueblo lands. The topography of Los Alamos County is characterized by flat, table-top mesas separated by steep-sloped canyons. The elevation change from rim to canyon bottom ranges from 400 to 600 feet (122–183 m), which provides for diverse flora and fauna. The canyon bottoms hold a mix of juniper savannah and ponderosa pine stands; south-facing slopes are dotted with thin stands of piñon, juniper, and an occasional ponderosa pine, and the north-facing slopes have ponderosa pine stands with some Douglas fir.

Due to the topography, population centers have developed on the long, narrow mesa tops that are separated by steep canyons throughout the county. Access to the ends of the mesa tops is usually serviced by only one road that provides access in and out of each mesa top. The limited access and dispersed configuration of population centers hinders the ability for rapid emergency response during wildfire events. Although the County Fire Department has been implementing vegetation treatments to reduce the fuel loads throughout the county for more than 20 years, not all areas have been treated, and in some cases areas that have been treated, need to be treated again.

Given these challenges, a critical component to mitigating wildfire hazard in Los Alamos County is to create and maintain defensible space around population centers and critical facilities and to educate the public to mitigate wildfire hazards. Hence, the County Fire Department applied for financial assistance through FEMA's Hazard Mitigation Grant Program (HMGP) to implement a wildfire hazard mitigation project focused on treating high-risk neighborhoods throughout the county. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Public Law [PL] 93-288, as amended, 42 United States Code [USC] 5121-5207) and is administered in the state of New Mexico by the New Mexico Department of Homeland Security and Emergency Management. FEMA Disaster Declaration #4199 (FEMA-4199 DR-NM) has made funds available to support projects that meet the criteria of HMGP. The proposed wildfire mitigation project meets the HMGP purpose and criteria.

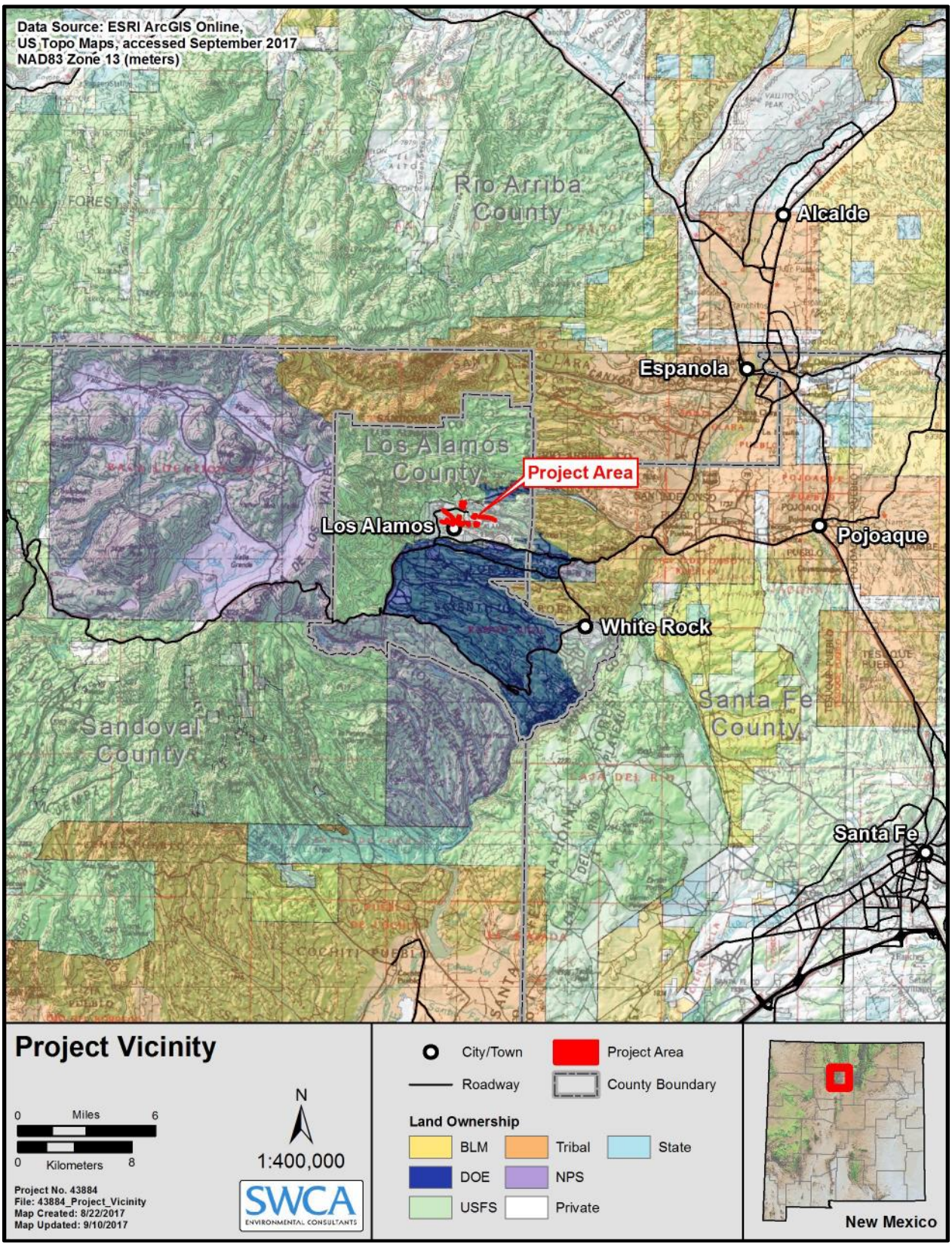

Figure 1.1. Los Alamos County Wildfire Mitigation Project vicinity map.

FEMA's involvement in hazardous fire risk reduction projects triggers the requirements of the National Environmental Policy Act of 1969 (NEPA; 42 USC 4321–4327), which include an evaluation by federal agencies of the potential environmental impacts of proposed actions and a consideration of the impacts during the decision-making process. In accordance with FEMA Instruction 108-1-1, an Environmental Assessment (EA) has been prepared pursuant to Section 102 of NEPA, as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ; 40 CFR Parts 1500-1508).. This biological assessment (BA) is a supporting document to the EA.

A BA must be prepared for federal actions that entail major construction activities (also defined as a project significantly affecting the quality of the human environment as defined under NEPA) to evaluate the potential effects on listed or proposed species. The special-status species for Los Alamos County, New Mexico, evaluated in this BA consist of all federally listed endangered, threatened, and proposed species (U.S. Fish and Wildlife Service [USFWS] 2017a); federal candidate and species under review (USFWS 2017a); and state-listed endangered and threatened species (Biota Information System of New Mexico [BISON-M] 2017; New Mexico Energy, Minerals, and Natural Resources Department [EMNRD], Forestry Division 2017.

The completion of the Endangered Species Act (ESA) consultation based on the analysis presented in this BA will facilitate FEMA's compliance with the following federal and state laws and regulations:

- ESA of 1973 (PL 93-205) and amendments of 1988 (PL 100-478)
- NEPA of 1969 (PL 91-190, 42 USC 4321 et seq.)
- Bald and Golden Eagle Protection Act of 1940 (16 USC 668–668d, 54 Stat. 250)
- Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703–712)
- Sections 401 and 404 of the Clean Water Act—all federal consultations, including the ESA, must be completed prior to U.S. Army Corps of Engineers (USACE) issuance of 404 authorizations
- New Mexico Endangered Plant Species Act (9-10-10 New Mexico Statutes Annotated and attendant Regulation 19 New Mexico Annotated Code 21.2)
- New Mexico Wildlife Conservation Act of 1974 (New Mexico Statutes Annotated 17-2-37 through 17-2-46, 1978 compilation)

2 CONSULTATION HISTORY

This is a new project and there is no prior ESA Section 7 consultation history for this project.

3 PROPOSED ACTION

The project area is divided into seven separate treatment areas, all within the immediate vicinity of the city of Los Alamos and the designated WUI. The Proposed Action would include vegetation thinning on approximately 114 acres of County open space lands to reduce the wildfire hazard around adjacent population centers. Vegetation thinning would include hand and mechanical

thinning of trees and shrubs using chainsaws and pole saws and a wood chipper/mulcher. The seven treatment areas are described in further detail in Table 3.1 and are depicted in Figure 3.1.

Table 3.1. Proposed Treatment Areas

Treatment Area	Acres	Hectares	Legal Description (Township, Range, Section, Quarter/Quarter)
Camino Redondo	5.75	2.32	Township 19N, Range 06E Section10: NE¼ SW¼
Camino Uva Project	7.19	2.90	Township 19N, Range 06E Section10: NW¼ SE¼, NE¼ SE¼
North Horse Stable Bench	23.24	9.39	Township 19N, Range 06E Section 10: NW¼ NE¼, SE¼ NW¼, SW¼ NE¼, NE¼ NE¼, SE¼ NE¼ Section 11: NW¼ NW¼, SW¼ NW¼, SE¼ NW¼, SW¼ NE¼
North Loma Linda	18.53	7.48	Township 19N, Range 06E Section 9: SE¼ NE¼, NE¼ SE ¼ Section 10: NW¼ SW¼
Ponderosa Estates Range Road	22.40	9.05	Township 19N, Range 06E Section 3: L21, L22, L23 Section 4: SE¼ SE¼, L15
Villa Bench	17.89	7.23	Township 19N, Range 06E Section 9: NW¼ SW¼, NE¼ SW ¼, NW¼ SE¼, SE¼ NW¼
Walnut Bench	18.93	7.65	Township 19N, Range 06E Section 9: NW¼ NW¼, NE¼ NW¼, SW¼ NE¼, NE¼ SE¼
Total	**113.92**	**46.03**	

Thinning prescription parameters include the following:

- Trees approximately 9 in. (22.5 cm) diameter breast height (dbh) or less would be thinned.
- No live piñon trees would be cut.
- No spruce trees would be cut.
- Approximately 50 to 150 trees per ac (124 to 370 trees per hectares) would be retained.
- Treatments would retain 40 to 60 percent canopy cover within each treatment area.
- Individual tree crowns (or in some cases tree groups) would be separated by a distance of approximately 10 to 25 feet (3 to 7.5 m).
- The crowns from tree groups would be separated by a distance of approximately 40 feet (12 m) from each other.
- Some trees 12 to 16 inches (30 to 40 cm) dbh may be removed to achieve the desired spacing and canopy cover.
- "Ladder" fuels that allow fire to move from the ground into the tree crowns would be removed, while retaining an average of 50 percent coverage throughout treatment area.

- Large logs and snags 15 inches (40 cm) in diameter or larger would be retained to the maximum extent practicable to provide habitat for prey species.
- No treatments would be implemented on slopes greater than 25 percent.
- Trees and snags along canyon rims would be retained to the maximum extent possible for wildlife habitat and to provide privacy barriers between residential areas and adjacent public use areas.
- Ponderosa Pine trees less than 8-inch dbh would be cut at full length to be used as water bars on steep slopes to minimize erosion, or used to create water holding ponds for wildlife.
- Invasive species, including understory invasive shrubs up to 6 feet tall, would be removed. Any subsequent treatments to control invasive species would be conducted in coordination with the Open Space Committee and in accordance with the County Noxious Weed Control Plan.

Use of materials would depend on the size and type of material and the site-specific characteristics and objectives of each treatment site. Logs would be limbed and placed on steep slopes to minimize erosion or used by the County Open Space Committee to create holding ponds for wildlife habitat. Usable wood would be stacked near access points for the public to gather and a portion of the usable wood would be blocked-up and donated to local church groups for distribution. Woody shrubs in the understory would be chipped in-place and dispersed evenly across the treatment area using a wood chipper or mulcher. Some materials may be stacked into slash piles near access points and removed to an off-site location by the Los Alamos County Fire Department.

All treatment areas would be accessed by existing roads; no new roads would be built. All treatments would be conducted on County Open Space lands designated as WUI priority areas for treatments and would be implemented by the Wildland Division of the Los Alamos County Fire Department. Generally speaking, treatments would be implemented by fire crews of up to 20 members.

There are seven treatment areas range in size from 5.8 to 23.2 acres in size. Based on previous thinning treatments in the County using fire crews of up to 20 persons, the duration of time to complete treatments at each site is anticipated to last between one and three weeks. The timing of treatments would be dependent on area-specific considerations, and would be coordinated with adjacent residents, user groups, schools, and the Los Alamos National Laboratory, to identify the best times for implementing the treatments at each site. Adjacent landowners would be notified 2 months in advance of the treatment.

Treatments would begin immediately once environmental analysis and compliance is complete and approved by FEMA. Per the grant application, Los Alamos County has 2 years to complete treatments once the environmental analysis and compliance is complete. Follow up treatments or maintenance at the seven sites would be ongoing, as needed.

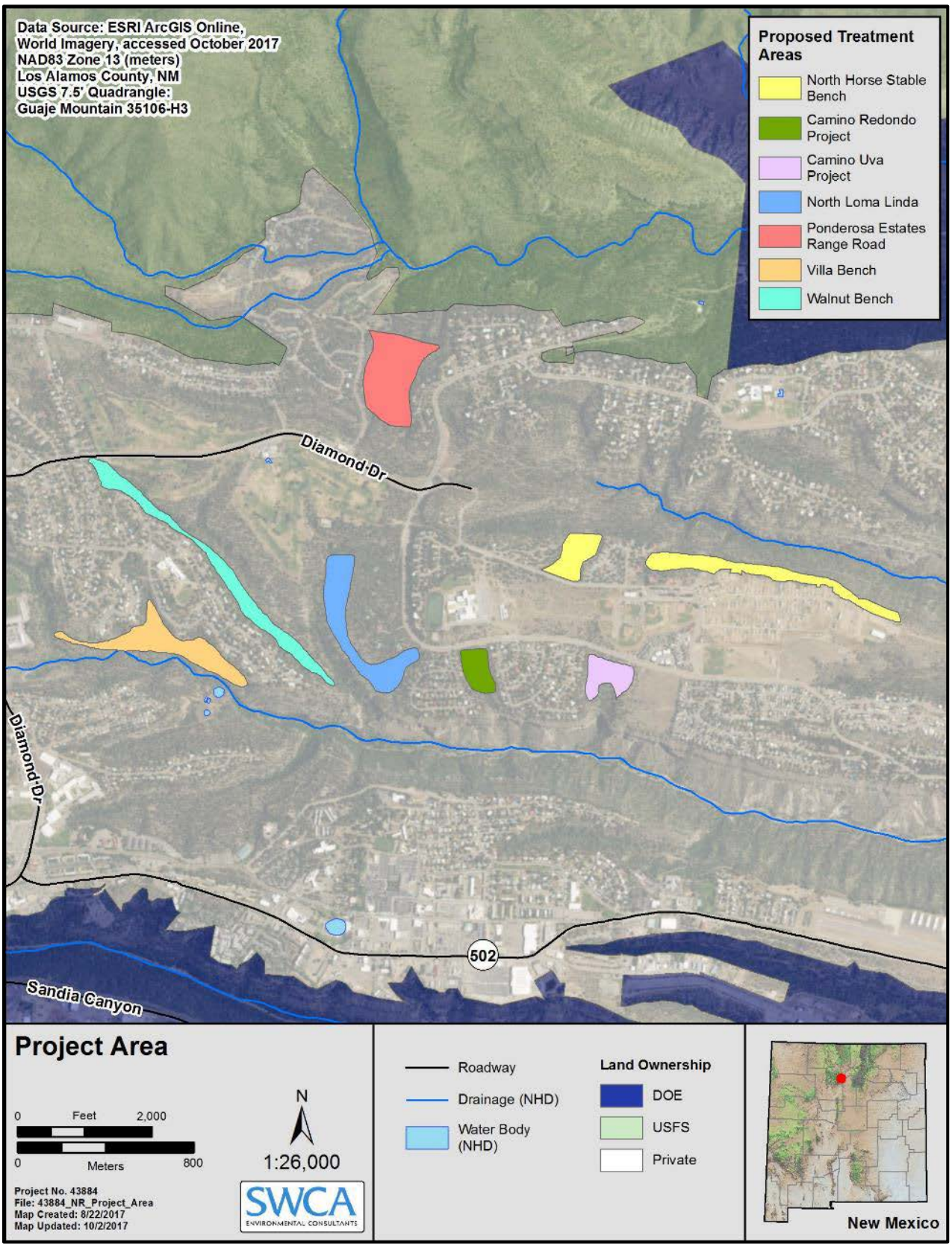

Figure 3.1. Los Alamos County Wildfire Mitigation Project area map.

4 PROJECT AREA

The project area as defined in this BA includes 113.92 acres (46.1 hectares) of County open space lands situated in the vicinity of Los Alamos, New Mexico. The action area consists of all areas to be affected directly or indirectly by the federal action, and not merely the immediate area involved in the action (50 CFR 402.02). SWCA Environmental Consultants (SWCA) conducted a 100% pedestrian natural resources survey of the project area on August 22-23, 2017, to identify the potential for special-status species, habitat communities regulated by the USFWS under Section 7 of ESA, jurisdictional drainages, or sensitive aquatic habitats regulated by the USACE under the Clean Water Act, and active and inactive migratory bird nests protected by the MBTA. Overall, the project area showed signs of recreational use, i.e., trails for hiking, cycling, and equestrian use. Appendix A contains representative photographs of the project area.

The average elevation of the project area is approximately 7,355 feet (2,242 m) amsl. The climate for this area, based on the climatic records for Los Alamos, New Mexico (295084), has an average annual maximum temperature of 60.1 degrees Fahrenheit (°F) (15.6 degrees Celsius [°C]), with an average annual minimum temperature of 36.1°F (2.3°C). The average annual precipitation is 18.3 inches (46.5 centimeters [cm]) with the majority occurring between May and October, while the average annual total snowfall is 53.2 inches (135.1 cm), which largely occurs between November and April (Western Regional Climate Center 2017). The weather during the survey was mostly sunny and mild, with little to no wind and occasional thunderstorms. Temperatures ranged from 70°F–85°F (21–29°C).

4.1 VEGETATION COMMUNITIES

The project area is located within one U.S. Environmental Protection Agency Level IV ecoregion, Rocky Mountain Lower Montane-Foothill Shrubland (Griffith et al. 2006). This ecoregion is characterized by ponderosa pine forests, sagebrush shrublands, pinyon-juniper woodlands, and foothill-mountain grasslands. It also includes areas of mountain mahogany shrublands and scattered Gambel oak (*Quercus gambelii*) woodlands. The woodlands are often interspersed with mountain big sagebrush (*Artemesia tridentata*), skunkbush (*Rhus* sp.), serviceberry (*Amelanchier* sp.), fringed sage (*Artemesia frigida*), rabbitbrush (*Ericameria nauseosa*), blue grama (*Bouteloua gracilis*), junegrass (*Koeleria macrantha*), western wheatgrass (*Pascopyrum smithii*), and Indian ricegrass (*Achnatherum hymenoides*).

The project area is primarily composed of ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), alderleaf mountain mohagany (*Cercocarpus montanus*), Gambel oak (*Quercus gambelii*), New Mexico locust (*Robinia neomexicana*), Arizona mountain-ash (*Sorbus dumosa*), quaking aspen (Populus tremuloides), and blue grama (*Bouteloua eriopoda*). Plant species recorded during the biological surveys are listed in Table 4.1. None of these species corresponds to a special-status species. No State of New Mexico noxious weeds were identified during the surveys.

Table 4.1. Plant Species Observed during Biological Surveys, August 2017

Common Name	Scientific Name
Alderleaf mountain mahogany	*Cercocarpus montanus*
Annual ragweed	*Ambrosia artemisiifolia*
Annual sunflower	*Helianthus annuus*

Common Name	Scientific Name
Apache plume	*Fallugia paradoxa*
Arizona mountain-ash	*Sorbus dumosa*
Bigelow's tansy aster	*machaeranthera bigelovii*
Blue grama	*Bouteloua gracilis*
Cardinal beardtongue	*Penstemon cardinalis*
Common mullein	*Verbascum thapsus*
Curly-cupped gumweed	*Grindelia squarrosa*
Douglas fir	*Pseudotsuga menziesii*
Gambel oak	*Quercus gambelii*
Gooseberry currant	*Ribes montigenum*
Gray alder	*Alnus incana*
Horseweed	*Erigeron Canadensis*
Lechuguilla	*Agave lechuguilla*
New Mexico groundsel	*Senecio neomexicana*
New Mexico locust	*Robinia neomexicana*
Nodding onion	*Allium cernuum*
One-seed juniper	*Juniperus monosperma*
Parry's goldenrod	*Oreochrysum parryi*
Pine dropseed	*Blepharoneuron tricholepis*
Plains pricklypear	*Opuntia polyacantha*
Ponderosa pine	*Pinus ponderosa*
Prairie sagewort	*Artemisia frigida*
Quaking aspen	*Populus tremuloides*
Rubber rabbitbrush	*Ericameria nauseosa*
Russian olive	*Elaeagnus angustifolia*
Scarlet gilia	*Ipomopsis aggregata*
Soaptree yucca	*Yucca elata*
Squirreltail	*Elymus elymoides*
Trailing fleabane	*Erigeron flagellaris*
Western purple cranesbill	*Geranium atropurpureum*
Western red columbine	*Aquilegia elegantula*
Western wheatgrass	*Pascopyrum smithii*
Yellow sweet clover	*Melilotus officinalis*

Note: Nomenclature follows the PLANTS Database (Natural Resources Conservation Service 2017a).

4.2 WILDLIFE

The Rocky Mountain Lower Montane-Foothill Shrubland ecoregion (Griffith et al. 2006) provides habitat for a variety of wildlife species. SWCA biologists detected 31 bird species and six mammals during the August 2017 survey of the project area (Table 4.2. Wildlife Species Observed during Biological Surveys, August 2017 (Table 4.2). No special-status species were observed during the survey.

Table 4.2. Wildlife Species Observed during Biological Surveys, August 2017

Common Name	Scientific Name
Birds	
Acorn woodpecker	*Melanerpes formicivorus*
American crow	*Corvus brachyrhynchos*
American robin	*Turdus migratorius*
Barn swallow	*Hirundo rustica*
Black-chinned hummingbird	*Archilochus alexandri*
Brown creeper	*Certhia americana*
Bushtit	*Psaltriparus minimus*
Canyon towhee	*Melozone fusca*
Chipping sparrow	*Spizella passerina*

Common Name	Scientific Name
Common raven	*Corvus corax*
Cordilleran flycatcher	*Empidonax occidentalis*
Evening grosbeak	*Coccothraustes vespertinus*
Green-tailed towhee	*Pipilo chlorurus*
House wren	*Troglodytes aedon*
Lesser goldfinch	*Spinus psaltria*
Mountain chickadee	*Poecile gambeli*
Mourning dove	*Zenaida macroura*
Pine siskin	*Spinus pinus*
Plumbeous vireo	*Vireo plumbeus*
Pygmy nuthatch	*Sitta pygmaea*
Rock pigeon	*Columba livia*
Rufous hummingbird	*Selasphorus rufus*
Stellar's jay	*Cyanocitta stelleri*
Spotted towhee	*Pipilo maculatus*
Turkey vulture	*Cathartes aura*
Western bluebird	*Sialia mexicana*
Western tanager	*Piranga ludoviciana*
Western wood pewee	*Contopus sordidulus*
White-breasted nuthatch	*Sitta carolinensis*
Woodhouse's scrub jay	*Aphelocoma woodhouseii*
Zone-tailed hawk	*Buteo albonotatus*
Mammals	
American black bear	*Ursus americanus*
Coyote*	*Canis latrans*
Lesser chipmunk	*Tamias minimus*
Mountain cottontail	*Sylvilagus nuttallii*
Mule deer†	*Odocoileus hemionus*
Rock squirrel	*Spermophilus variegatus*

Note: All species detected via direct observation unless noted otherwise.
* detected via mounds and/or nests
† detected via tracks and/or scats

4.3 WATERS OF THE U.S. AND SPECIAL AQUATIC SITES

SWCA conducted a 100% pedestrian survey of the project area investigating the presence of potential waters of the U.S. and special aquatic sites, including wetlands. Potential waters of the U.S. were identified by the presence of an ordinary high water mark (OHWM), defined bed and bank, or the three mandatory USACE criteria: hydrophytic vegetation, hydric soils, and wetland hydrology (Figure 4.1). The presence/absence of wetlands was identified in the field using routine on-site delineation methods as in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). Determination of wetland habitat (type) was based on the classification system developed by Cowardin et al. (1979). Other sources used to identify the presence/absence of wetlands include the *Pocket Guide to Hydric Soil Field Indictors, Version 7.0* (Wetland Training Institute, Inc. 2013). Wetland boundaries were delineated where hydrophytic vegetation, hydric soils, and hydrology were present. An area was determined to be a wetland if it displayed a positive indication of all three wetland criteria. Data at each site verifying a wetland were recorded on a USACE Wetland Determination Data Form for the Arid West Region. The presence/absence of lotic systems (e.g., creeks, rivers, arroyos, human-made ditches; collectively "streams") were identified in the field using the methods outlined in the *Guide to the Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (USACE 2014).

During SWCA's field surveys, all National Hydrography Dataset (NHD) (U.S. Geological Survey 2017) drainages were investigated. Twelve potential waters of the U.S. were identified in the project area, all of which consisted of ephemeral streams and wetlands. Two wetlands or other special aquatic sites were identified in the project area (Table 4.3. and Table 4.4). Appendix B contains representative photographs of the water features in the project area. Best management practices (BMPs) and project conservation measures listed in Section 8 and Appendix E, respectively, will be implemented to control erosion, reduce spills and pollution, provide habitat protection, and mitigate impacts to these water bodies during project implementation.

Table 4.3. Mapped Streams and Drainages in the Project Area

Streams and Drainages							
Final (Report) Number	Field Number	Name	NHD Flowline?	Average Width (feet)	Average Width (m)	Total Area	
						Acres	Hectares
DR01	DR01	Drainage	No	1.00	0.30	0.03	0.01
DR02	DR02	Drainage	No	1.00	0.30	0.01	0.00
DR03	DR03	Drainage	No	3.00	0.91	0.02	0.01
DR04	DR04	Drainage	No	1.00	0.30	0.07	0.03
DR05	DR05	Drainage	No	1.00	0.30	0.01	0.01
DR06	DR06	Drainage	No	3.00	0.91	0.11	0.04
DR07	DR07	Drainage	No	3.00	0.91	0.04	0.02
DR08	DR08	Drainage	No	1.00	0.30	0.023	0.01
DR09	DR09	Drainage	No	2.00	0.61	0.02	0.01
ST01	ST01	Stream	Yes	3.00	0.91	0.01	0.00
					Total	**0.34**	**0.14**

Table 4.4. Mapped Wetlands in the Project Area

Mapped Wetlands			
Final (Report) Number	NWI Wetland	Total Area	
		Acres	Hectares
Wetland 1	No	0.01	0.00
Wetland 2	No	0.08	0.03
	Total	**0.09**	**0.03**

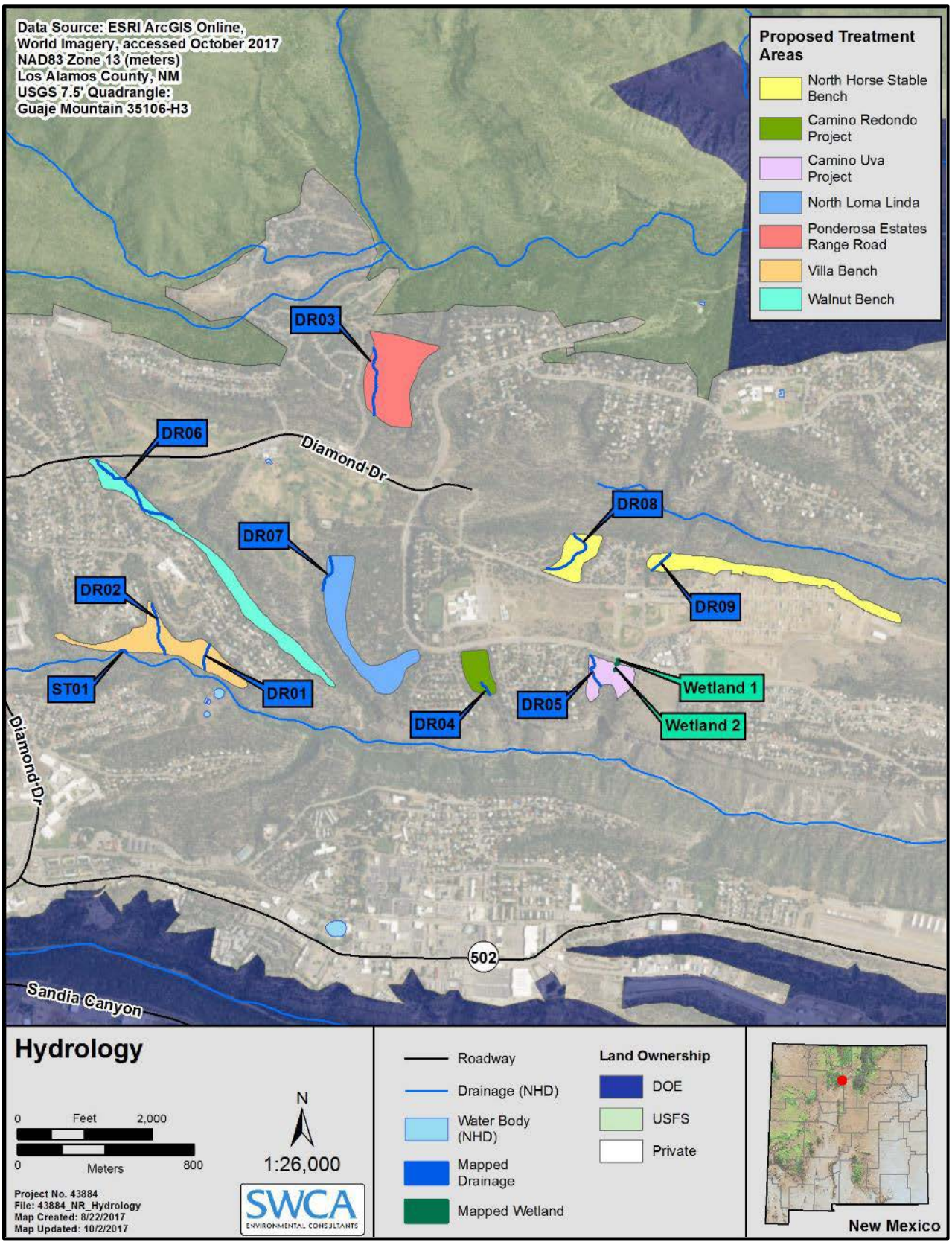

Figure 4.1. Los Alamos County Wildfire Mitigation Project hydrology map.

4.4 SOILS

According to the Natural Resources Conservation Service (2017b), five mapped soil types are within the project area (Table 4.5). Descriptions of each soil type are provided in Appendix C. None of the soil types meet hydric criteria. Surface geology within the project area includes large blocks of older andesite in caldera-collapse breccia facies locally exposed on the resurgent dome of the Valles Caldera.

Table 4.5. Soils in the Project Area

Project Area	Map Unit Symbol	Soil Type Name	Acres	Hectares	Percent of Project Area
Camino Redondo	21	Carjo loam, 1 to 9 percent slopes	5.75	2.32	100%
		Total	**5.75**	**2.32**	**100%**
Camino Uva	21	Rock outcrop-Hackroy complex 1 to 8 percent slopes	0.44	0.18	6%
	124	Rock outcrop	0.36	0.15	5%
	281	Carjo loam, 1 to 9 percent slopes	6.38	2.58	89%
		Total	**7.18**	**2.91**	**100%**
North Loma Linda	124	Rock outcrop	16.36	6.61	88%
	281	Carjo loam, 1 to 9 percent slopes	2.17	0.88	12%
		Total	**18.53**	**7.49**	**100%**
North Horse Stable Bench	124	Rock outcrop	17.48	7.06	75%
	162	Hackroy-Nyjack association, 1 to 5 percent slopes	2.95	1.19	13%
	281	Carjo loam, 1 to 9 percent slopes	2.81	1.14	12%
		Total	**23.24**	**9.39**	**100%**
Ponderosa Estates Range Road	124	Rock outcrop	10.68	4.31	48%
	281	Carjo loam, 1 to 9 percent slopes	0.09	0.04	0%
	283	Mirand-Alanos complex, 5 to 40 percent slopes	11.63	4.70	52%
		Total	**22.4**	**9.05**	**100%**
Villa Bench	124	Rock outcrop	17.47	7.06	98%
	281	Carjo loam, 1 to 9 percent slopes	0.42	0.17	2%
		Total	**17.89**	**7.23**	**100%**
Walnut Bench	124	Rock outcrop	16.54	6.68	87%
	281	Carjo loam, 1 to 9 percent slopes	2.40	0.97	13%
		Total	**18.94**	**7.65**	**100%**

Source: Natural Resources Conservation Service (2017b).

5 LIST OF SPECIAL-STATUS SPECIES

All information on the vegetation and wildlife in the project area was derived from biological surveys conducted on August 22 and 23, 2017 (Table 5.1 and Table 5.2). In addition to recording wildlife and plants observed during the surveys, habitat was evaluated for the possible occurrence of special-status species. As part of that habitat evaluation effort, the presence of any water, arroyos, playas, wetlands, stock tanks, and special soils was documented. Presence of active and inactive bird nests and burrows was also recorded. Copies of the field notes are provided in Appendix F.

The special-status species evaluated in this report consist of 1) all federally protected (i.e., endangered and threatened) species; 2) additional species listed by the USFWS as candidate and proposed species, and species under review (USFWS 2017a); and 3) New Mexico state-listed endangered and threatened species (BISON-M 2017). The species federally listed as endangered, threatened, or proposed and being evaluated in this BA are listed in Table 5.1. The USFWS official species list is in Appendix D.

Five federally endangered, threatened, or proposed species have the potential to occur in Los Alamos County, New Mexico. Of those, only two have the potential to occur in the project area and are further evaluated in Table 5.1 and Section 6. The five federally listed species include the Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax traillii extimus*), Jemez Mountains salamander (*Plethodon neomexicanus*), the yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and New Mexico meadow jumping mouse (*Zapus hudsonius luteus*).

Eight other special-status species are listed to occur in Los Alamos County, New Mexico (see Table 5.2). Of the eight, three species—the wood lily (*Lilium philadelphicum*), the gray vireo *(Vireo vicinior)* and spotted bat (*Euderma maculatum*)—were found to have the potential to occur in the project area and are further evaluated in Section 6.2. The project area was found to not have potential habitat for the five remaining species, which include the violet-crowned hummingbird (*Amazilia violiceps*), broad-billed hummingbird (*Cynanthus latirostris magicus*), bald eagle (*Haliaeetus leucocephalus alascanus*), Arctic peregrine falcon (*Falco peregrinus tundrius*), and the American peregrine falcon (*Falco peregrinus anatum*).

Table 5.1. Species Federally Listed as Endangered, Threatened, or Proposed in Los Alamos County, New Mexico

Common Name (*Scientific Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Amphibians				
Jemez Mountains salamander (*Plethodon neomexicanus*)	USFWS E w/CH; State E	Endemic to mixed-conifer forests in the Jemez Mountains in Sandoval, Los Alamos, and Rio Arriba Counties of north-central New Mexico. Occurs in mixed-conifer forest, consisting primarily of Douglas fir (*Pseudotsuga menziesii*), blue spruce (*Picea pungens*), Engelman spruce (*P. engelmannii*), white fir (*Abies concolor*), limber pine (*Pinus flexilis*), ponderosa pine (*P. ponderosa*), Rocky Mountain maple (*Acer glabrum*), and aspen (*Populus tremuloides*) (Degenhardt et al. 1996). Although pure stands of ponderosa pine may not be considered ideal habitat, the species has occasionally been found in this habitat.	May occur. Suitable mixed-conifer forests exists in the project areas of Walnut Bench and North Horse Stable Bench.	May affect, is not likely to adversely affect. See Section 6.1 below.
Birds				
Mexican spotted owl (*Strix occidentalis lucida*)	USFWS T	Dependent on the presence of large trees, snags, downed logs, dense canopy cover, and multistoried conditions within predominantly mixed-conifer and pine-oak habitats on a steep mountain hillside. Critical habitat for the species occurs approximately 4.5 miles (7.2 km) to the south near Water Canyon.	May occur. Portions of Pueblo Canyon provides suitable nesting habitat for owls, i.e., steep canyon walls; however, the steep-walled portions of the canyon are outside the project area boundary.	May affect, is not likely to adversely affect. See Section 6.1 below.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	USFWS E w/CH; State E	In New Mexico is known to breed only along the Gila River and the Rio Grande. Associated with moist riparian areas throughout the year. Breeding habitat requirements vary by region. In migration may be associated with willows (*Salix* sp.) along ditches, cottonwood (*Populus* sp.) woodland, and saltcedar (*Tamarix* sp.) stands.	Unlikely to occur in the project area due to lack of suitable habitat.	No effect
Yellow-billed cuckoo (*Coccyzus americanus*)	USFWS T	Uses wooded habitat with dense cover and water nearby, including woodlands with low, scrubby vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes.	Unlikely to occur in the project area due to lack of suitable habitat.	No effect
Mammals				
New Mexico meadow jumping mouse (*Zapus hudsonius luteus*)	USFWS E	Occupies mesic habitats in lowland valleys and along montane streams, and in riparian zones along permanent waterways. It is also found along irrigation ditches and in wet meadow areas within some river floodplains.	Unlikely to occur due to lack of suitable habitat.	No effect

* Federal (USFWS) status definitions:
E = **Endangered.** Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.
T = **Threatened.** Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take (see definition above) of a species listed as threatened.
ENEP = Experimental, Non-essential Population. Any reintroduced population established outside the species' current range, but within its historical distribution. For purposes of Section 7 consultation, experimental, non-essential populations are treated as proposed species (species proposed in the *Federal Register* for listing under Section 4 of the ESA), except on national wildlife refuges and national parks, where they are treated instead as threatened.
w/CH = with Critical Habitat. Critical habitat corresponds to specific areas within the geographical area occupied by the species at the time of listing, with physical or biological features essential to the species' conservation and requiring special management considerations or protection.
* State status definitions:
E = **Endangered.** Any species that is considered by the State of New Mexico (New Mexico Department of Game and Fish for wildlife, Forestry and Resources Conservation Division for plants) as being in jeopardy of extinction or extirpation from the state.
T = **Threatened.** Any species that, in the view of the State of New Mexico, is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico.
Note: A no effect determination is defined based on recommendations by the USFWS.
Except where otherwise noted, range or habitat information for wildlife species is taken from the BISON-M website (BISON-M 2017), the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2017a), Cartron (2010), and the New Mexico Rare Plant Technical Council (1999).

Table 5.2. Other Special-Status Species including State-Listed Species in Los Alamos County, New Mexico

Common Name (*Scientific Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Plants				
Wood lily (*Lilium philadelphicum*)	State E	Common in high meadows of the mountain west and some intact tall-grass prairies of the Great Plains. Occurs in riparian, ponderosa pine, mixed conifer, and spruce-fir forests. The wood lily can be found in canyons above 7,500 feet (2,285 m) amsl and usually occurs in areas of old-growth conifer forests.	May occur. The project area contains suitable ponderosa pine woodlands and rocky outcrops that may serve as suitable habitat for the species.	May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability See Section 6.2
Birds				
American peregrine falcon (*Falco peregrinus anatum*)	State T	Found in New Mexico year-round. All nests in New Mexico are found on cliffs. In migration and during winter months New Mexico's peregrine falcons are typically associated with water and large wetlands.	Unlikely to occur in project area due to lack of large water bodies and large wetlands.	No impact
Arctic peregrine falcon (*Falco peregrinus tundrius*)	State T	Migrant throughout New Mexico. Winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands: low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	Unlikely to occur in the project area due to lack of water, large wetlands.	No impact
Bald eagle (*Haliaeetus leucocephalus alascanus*)	State T	Occurs in New Mexico year-round. Breeding is restricted to a few areas mainly in the northern part of the state along or near lakes. In migration and during winter months the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog (*Cynomys* sp.) colonies. Typically perches in trees.	Unlikely to occur in the project area due to the lack of abundant water and prairie dog colonies.	No impact
Broad-billed hummingbird (*Cynanthus latirostris magicus*)	State T	Migratory species. Breeds in Guadalupe Canyon in southwestern New Mexico and rarely found in canyons of the Peloncillo Mountains. Accidental anywhere else in the state. Occupies desert riparian deciduous woodland (especially of cottonwoods) and marshes. Occurs where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins.	Unlikely to occur in the project area due to the lack of desert riparian forest woodlands.	No impact
Gray vireo (*Vireo vicinior*)	State T	Strongly associated with piñon-juniper and scrub oak habitats. Distributed mainly across the western two-thirds of the state. Prefers gently sloped canyons, rock outcrops, ridgetops, and moderate scrub cover.	May occur. Preferred habitat exists in the easternmost Horse Stable Bench project area.	May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability See Section 6.2
Violet-crowned hummingbird (*Amazilia violiceps*)	State T	The array of habitats used by this hummingbird in Mexico is quite varied, but in the United States the species is found primarily in riparian woodlands at low to moderate elevations (NMDGF 2016; Baltosser 1986). In Guadalupe Canyon, these woodlands are characterized by Fremont cottonwood (*Populus fremontii*), Arizona sycamore (*Platanus wrightii*), Arizona white oak (*Quercus arizonica*), and netleaf hackberry (*Celtis reticulata*).	Unlikely to occur. The project area is outside the species typical range in New Mexico.	No impact

Common Name (*Scientific Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Mammals				
Spotted bat (*Euderma maculatum*)	State T	In New Mexico, spotted bats have been collected in areas near cliffs, including piñon-juniper woodlands and from streams or water holes within ponderosa pine or mixed coniferous forest. It has also been collected over cattle tanks in a meadow surrounded by mixed coniferous forest and near a ridge with cliffs and limestone outcroppings. The spotted bat is usually captured around a water source including desert pools or cattle tanks. It also may use rivers or desert washes as travel corridors.	May occur. The project area contains suitable ponderosa pine woodlands and rocky outcrops that may serve as suitable roosting habitat for the species.	May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability See Section 6.2

* State status definitions:
E = Endangered. Any species that is considered by the State of New Mexico (New Mexico Department of Game and Fish for wildlife, Forestry and Resources Conservation Division for plants) or State of Texas as being in jeopardy of extinction or extirpation from the state.
T = Threatened. Any species that, in the view of the States of New Mexico or Texas, is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico.
Note: A no effect determination is defined based on recommendations by the USFWS.
Except where otherwise noted, range or habitat information for wildlife species is taken from the BISON-M website (BISON-M 2017), the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2017a), Cartron (2010), and the New Mexico Rare Plant Technical Council (1999).

5.1 U.S. FISH AND WILDLIFE SERVICE CRITICAL HABITAT

The project areas are not within any designated or proposed USFWS critical habitat. However, the nearest designated USFWS critical habitat is for the Jemez Mountains salamander and is approximately 1.25 miles (2.01 km) west of the Villa Bench project area (Table 5.3). The nearest designated USFWS critical habitat for the Mexican spotted owl is approximately 4.50 miles (7.24 km) southwest of the of the Villa Bench project area (USFWS 2004, 2017b).

Table 5.3. Distance to USFWS Critical Habitat from the Project Area

Species	Miles	Kilometers	Direction
Jemez Mountains salamander	1.25	2.01	west
Mexican spotted owl	4.50	7.24	southwest

6 EFFECTS ANALYSIS

Federally threatened, endangered, and proposed species, as well as other special conservation species, with the potential to occur in the project area are discussed in detail in this section. Species that are unlikely to occur in the project area are discussed in Table 5.1 and Table 5.2 and are not further evaluated in detail.

The potential for local species occurrence was based on 1) existing information on distribution, and 2) qualitative comparisons of the habitat requirements of each species with vegetation communities, landscape features, and/or water quality conditions in the project area. Possible impacts to these species were evaluated based on reasonably foreseeable project-related activities and the local loss of habitat.

All of the special-status species in Los Alamos County were first evaluated based on their potential to occur in the project area. The potential for occurrence of a species was identified using the following categories.

- *Known to occur*—the species was documented in the project area either during or prior to the field surveys by a reliable observer.
- *May occur*—the project area is within the species' currently known range, and vegetation communities, soils, water quality conditions, etc., resemble those known to be used by the species.
- *Unlikely to occur*—the project area is within the species' currently known range, but vegetation communities, soils, water quality conditions, etc., do not resemble those known to be used by the species, or the project area is clearly outside the species' currently known range.

Species with the potential to occur in the project area were then further evaluated for possible impacts from the proposed project. However, effect determination categories are spelled out differently based on the exact legal status of a species and the mandates and responsibilities of the agency tasked to manage or protect that species. Federally protected (i.e., threatened or endangered) species were assigned to one of three categories of possible effect, following USFWS guidelines.

- *May affect, is likely to adversely affect*—This effect determination means that the proposed action would have an adverse effect on the species or its critical habitat. Any action that would result in "take" of an endangered or threatened species is considered an adverse effect. A combination of beneficial and adverse effects is still considered "likely to adversely affect," even if the net effect is neutral or positive. Adverse effects are not considered discountable because they are expected to occur. In addition, the probability of occurrence must be extremely small to qualify as discountable effects. Likewise, an effect that can be detected in any way or that can be meaningfully articulated in a discussion of the results of the analysis is not insignificant; it is an adverse effect.

- *May affect, is not likely to adversely affect*—Under this effect determination, all effects to the species and its critical habitat are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without adverse effects to the species (for example, there cannot be "balancing," so that the benefits of the action would outweigh the adverse effects). Insignificant effects relate to the size of the impact and should not reach the scale where take occurs. Discountable effects are considered extremely unlikely to occur. Based on best judgment, a person would not: 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur. Determinations of "not likely to adversely affect, due to beneficial, insignificant, or discountable effects" require written concurrence from the USFWS.
- *No effect*—a determination of no effect means there are absolutely no effects to the species and its critical habitat, either positive or negative. It does not include small effects or effects that are unlikely to occur. No effect determinaitions do not require the action agency to consult with or obtain concurrence from the USFWS, therefore FEMA is not seeking concurrence with its no effect determinations that are summarized in this BA.

The ESA defines "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

As directed by the USFWS, species proposed for listing were evaluated using the following effect determination categories.

- No effect.
- Not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.
- Likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.

Jeopardy is in turn defined under the ESA as occurring when "an action is reasonably expected, directly or indirectly, to diminish a species' numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced."

Impact determinations for all other species (USFWS candidate, species under federal review, and state-listed species that are not federally threatened or endangered) were evaluated for possible impacts as follows.

- *No impact*—the project would have no impact on a species if 1) the species is considered unlikely to occur (range, vegetation, etc., are inappropriate), and 2) the species or its sign was not observed during surveys of the project area.
- *Beneficial impact*—the project is likely to benefit the species, whether it is currently present or not, by creating or enhancing habitat elements known to be used by the species.
- *May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability*—the project is not likely to adversely impact a species if 1) the species

may occur but its presence has not been documented, and 2) project activities would not result in disturbance to areas or habitat elements known to be used by the species.

- *May impact individuals or habitat and is likely to result in a trend toward federal listing or loss of viability*—the project is likely to adversely impact a species if 1) the species is known to occur in the project area, and 2) project activities would disturb areas or habitat elements known to be used by the species or would directly affect an individual.

The distribution and proximity of federally designated critical habitat was examined using the USFWS's (2017b) Critical Habitat Portal.

6.1 FEDERALLY THREATENED, ENDANGERED, AND PROPOSED SPECIES

Although five federally listed threatened, endangered, and proposed species occur in Los Alamos County, only two federally listed species have the potential to occur in the project area: the Jemez Mountains salamander and Mexican spotted owl.

6.1.1 *JEMEZ MOUNTAINS SALAMANDER (PLETHODON NEOMEXICANUS)*

STATUS AND DISTRIBUTION

The Jemez Mountains salamander is a federally and New Mexico state-listed endangered species with critical habitat that is endemic to the Jemez Mountains in Sandoval, Los Alamos, and Rio Arriba Counties of north-central New Mexico (Degenhardt et al. 1996; New Mexico Department of Game and Fish [NMDGF] 2016; Stebbins 2003; USFWS 2013a, 2013b). This species is usually present in its habitat year-round and spends much of its life underground. However, it may be found at the surface July through September, when conditions are suitable.

HABITAT CHARACTERISTICS

The Jemez Mountains salamander typically occurs on shady, wooded areas in mixed-conifer habitat with abundant rotted logs and surface rocks at elevations between 7,200 and 11,250 feet (2,195–3,429 m) amsl. Such areas are characterized by conifers, including Douglas fir (*Pseudotsuga menziesii*), blue spruce (*P. pungens*), Engelmann spruce (*Picea engelmannii*), and white fir (*Abies concolor*) (Degenhardt et al. 1996; NMDGF 2016; Stebbins 2003). Jemez Mountains salamanders have also been found in stands of quaking aspen (*Populus tremuloides*) and meadows at high elevation (Hathcock et al. 2015). When this species is observed, it is most often found in areas with subsurface rock habitats characterized by moist, wet soils approximately July through October (Degenhardt et al. 1996; NMDGF 2016).

Jemez Mountains salamanders spend much of the time below the surface, under surface litter and in fallen logs and are rarely observed on the surface. When observed, it is most often encountered under and inside well-rotted logs or under rocks when it is warm and wet. Old talus slopes are important types of cover for this species, especially those with a good covering of damp soil and plant debris (Degenhardt et al. 1996; NMDGF 2016; Ramotnik and Scott 1988).

EFFECTS ANALYSIS AND EFFECTS DETERMINATION

The Jemez Mountains salamander is not known to exist within the project area, however, relic populations can be found on wet, north-facing slopes in ponderosa and mixed-conifer forests of the Jemez Mountains. The average elevation of the project area (i.e., 7,355 feet) is at the low end of the elevation range for this species. The two project areas with conditions that best meet the criteria and may contain habitat for the Jemez Mountains salamander are Walnut Bench and North Horse Stable Bench. One individual Jemez Mountains salamander was observed in 2010, approximately 0.28 mile (0.45 km) southeast of the Walnut Bench project area (personal communication, Charles D. Hathcock, Los Alamos National Laboratory, via email with Matt McMillan, SWCA, September 29, 2017).

Thinning vegetation would reduce the potential for a severe wildfire to impact salamander habitat in and around the project area. Additionally, the proposed action includes actions to promote salamander habitat, such as retaining Douglas fir trees; developing water holding ponds to promote moist habitat conditions; and dispersing wood chips to help retain ground moisture.

Jemez Mountains salamanders are not known to occur in the project area; however the project areas have not been surveyed for their presence. Moist conditions resulting from the slope, aspect, and vegetation cover in the Walnut Bench and North Horse Stable Bench could provide suitable habitat for the Jemez Mountains salamander. To reduce the potential for impacting salamanders that may be present in the the two units that best meet salamander habitat conditions, Walnut Bench and North Horse Stable Bench treatment units, a seasonal work restriction would be applied from June 15 through October 30 (i.e., the season when salamanders are most likely to be active on the surface). Seasonal restrictions will avoid any direct effects to the species if present in these two treatment areas.

The Proposed Action *may affect, is not likely to adversely affect* the Jemez Mountains salamander. No treatments will be conducted in the North Horse Stable Bench and Walnut Bench treatment units from June 15 through October 30 (i.e., the season when salamanders are most likely to be active on the surface). The project area is not within designated critical habitat for the Jemez Mountains salamander and no impacts to critical habitat are part of the Proposed Action. The Proposed Action will have *no effect* on critical habitat of the Jemez Mountains salamander.

6.1.2 MEXICAN SPOTTED OWL (STRIX OCCIDENTALIS LUCIDUS)

STATUS AND DISTRIBUTION

The Mexican spotted owl was listed as threatened by the USFWS on March 16, 1993, due to declining population and concerns about ongoing threats to its habitat (USFWS 1993). Designated critical habitat was designated on August 20, 2004 (USFWS 2004). Mexican spotted owls are a resident species in the forested mountains of New Mexico, breeding from March through August. They inhabit dense mixed-conifer habitats zones with complex vegetation structure. They hunt at night for prey including small mammals, lizards, and insects. The Mexican spotted owl population fluctuates in response to prey availability. Therefore, prey habitat, such as fallen logs, are an essential component of Mexican spotted owl habitat.

HABITAT CHARACTERISTICS

Mexican spotted owls prefer to nest in mature or late successional mixed-conifer habitats associated with a dense understory. They are cavity nesters, preferring holes already excavated in snags or other large trees by woodpeckers. They require large patches of preferred habitat, with most territories ranging from 2.7 to 4.2 square miles (1,728 to 2,688 acres). Adult Mexican spotted owls are faithful to their nesting sites, returning year after year to breed in the same location.

EFFECTS ANALYSIS AND EFFECTS DETERMINATION

No suitable nesting habitat was identified within the project area during the biological survey; however, owls are known to occur within Pueblo Canyon and may utilize the project area for foraging. Live and dead Mexican spotted owls have been documented at Los Alamos National Laboratory in the canyons south of the Villa Bench project area (personal communication, Charles D. Hathcock, Los Alamos National Laboratory, via email with Matt McMillan, SWCA, September 29, 2017). Villa Bench, is approximately 4.5 miles southwest of the closest designated critical habitat for Mexican spotted owl. The Villa Bench treatment area is 17.9 acres in size., which is significantly smaller than the Mexican spotted owl's preferred large patch habitat size that ranges in size from 1,728 to 2,688 acres. Combined the seven proposed treatment areas total 114 acres.

Sights and sounds of humans are common in the project area from the year round recreational trail use. Noise associated with tree thinning equipment (i.e., chainsaws and wood chipper), may disturb owls in the immediate vicinity of treatment areas. However, noise disturbance would be temporary, lasting up to three weeks at each treatment site. During treatments any resident Mexican spotted owls could migrate to areas of suitable habitat in the vicinity of the project areas to avoid disturbance and noise.

To the extent possible the Fire Department would limit thinning during the migratory bird breeding season (March–August); however, treatments are currently planned to be implemented year round in order to complete the project within the two year project grant period. If work must take place during Mexican spotted owl breeding and nesting season from March 1 to August 31, nesting surveys must be conducted by a permitted biologist prior to project implementation in order to identify any occupied nests and establish avoidance buffers until the young have fledged.

The Proposed Action *may affect, is not likely to adversely affect* the Mexican spotted owl. To avoid take of individual owls during the bird breeding season, surveys would be conducted by a permitted biologist prior to project implementation. The project area is not within designated critical habitat for the Mexican spotted owl; hence the Proposed Action would not impact critical habitat. The Proposed Action will have *no effect* on critical habitat of the Mexican spotted owl.

6.2 OTHER CONSERVATION SENSITIVE SPECIES

Other conservation sensitive species with the potential to occur in the project area are discussed in detail in this section. Although eight state-listed threatened or endangered species occur in Los Alamos County, only two species have the potential to occur in the project area: the wood lily and spotted bat. Species that are unlikely to occur in the project area are discussed in Table 5.2 and are not evaluated in detail in this section.

6.2.1 WOOD LILY (LILIUM PHILADELPHICUM)

STATUS AND DISTRIBUTION

The wood lily is a New Mexico state endangered plant species (EMNRD 2017). The wood lily is one of the widest ranging of the true lily species, and is common in high meadows of the mountain West and some intact tall-grass prairies of the Great Plains. The presence of the wood lily has been documented in Los Alamos County, Bandelier National Monument, and Santa Fe National Forest lands (Foxx et al. 1998; Keller 2011).

HABITAT CHARACTERISTICS

The wood lily can be found in canyons above 7,500 feet (2,285 m) amsl and usually occurs in areas of old-growth, mixed-conifer forests.

EFFECTS ANALYSIS AND EFFECTS DETERMINATION

The project area contains ponderosa pine woodlands and rocky outcrops that may serve as suitable habitat for wood lilies; however no lilies were found during the biological survey in August 2017. Suitable habitat should be protected where possible from disturbance activities that would impact the habitat. The proposed project may impact individual wood lilies, but it is not likely to result in a trend toward federal listing, or loss of viability.

6.2.2 GRAY VIREO (VIREO VICINIOR)

STATUS AND DISTRIBUTION

The gray vireo is designated as Threatened in New Mexico, where it is found mostly in the western part of the state in mid-elevation juniper woodlands, scrublands, foothills, and mesa habitats. It is occasionally found in areas with oaks or pinyons with a well-developed grass component. It is considered rare to uncommon locally throughout the state, but the largest known populations are located in the Guadalupe Mountains, Manzanita Mountains, Navajo Dam area, Caja del Rio area, and the Quebradas area. Some smaller populations exist in the Organ Mountains, San Andres National Wildlife Refuge, the La Plata area, the Ladron Mountains, near Glenwood, and in the vicinity of Zuni (Hubbard 1978; NMDGF 1988; 2016).

HABITAT CHARACTERISTICS

Generally, the gray vireo prefers open woodlands/shrublands featuring evergreen trees and shrubs of various kinds. Junipers (*Juniperus* spp.) are the dominant element in most areas of occurrence in New Mexico, although oaks (*Quercus* sp.) are also common in the southern part of their range (Hubbard 1985; NMDGF 2016). Gray Vireos breed in pinyon pine-Utah juniper woodlands, oneseed juniper savannas, mixed juniper-oak woodlands, and desert riparian communities (NMDGF 2016; DeLong and Williams 2006).

EFFECTS ANALYSIS AND EFFECTS DETERMINATION

The project area contains some pinyon-juniper woodland, which the species prefers for nesting; however, pinyon-juniper makes a very small portion of the proposed project area and there is abundant habitat east of the project area. Generally speaking, treatments would remove understory shrubs and trees 9 inch dbh or less. Tree removal activity may negatively impact any nesting sites of the species since treatments would remove understory shrubs and trees 9 inch dbh or less. Noise may disturb nesting gray vireos in the immediate treatment areas; however, noise disturbance would be temporary as the treatment areas are less than 25 acres in size each. Hence, the proposed project may temporarily impact individual gray vireos, but it is not likely to result in a trend toward federal listing, or loss of viability.

6.2.3 SPOTTED BAT (EUDERMA MACULATUM)

STATUS AND DISTRIBUTION

The spotted bat is a New Mexico state threatened species. This bat has been found in New Mexico from the vicinity of the Rio Grande valley westward, occurring most regularly in the Jemez, San Mateo, and Mogollon Mountains and on Mt. Taylor—which are presumably key habitat areas (Fenton et al. 1983, 1987). There are additional highland records from near Ghost Ranch (Rio Arriba County) and Lake Roberts (Grant County), as well as single lowland records from Aztec (San Juan County), Albuquerque (Bernalillo County), and Mesilla Park (Doña Ana County) (NMDGF 2016). Spotted bats have been documented in Los Alamos National Laboratory property along cliffs on the north side of Los Alamos Canyon and Sigma Mesa (Bogan et al. 1998; Schoenberg 2014).

HABITAT CHARACTERISTICS

Spotted bats are known to occur in many habitats, including riparian communities, pinyon-juniper woodlands, ponderosa pine and spruce-fir forests, and open semi-desert shrublands between 3,900 and 10,600 feet (1,189–3,231 m) amsl (Findley et al. 1975; NMDGF 2016). Rocky cliffs are necessary to provide suitable cracks and crevices for roosting, as is access to water. The bat shows apparent seasonal change in habitat, occupying ponderosa pine woodlands in the reproductive season and lower elevations at other times of the year (BISON-M 2017). Cattle ponds and meadow grasslands may provide foraging habitat for some individual species.

EFFECTS ANALYSIS AND EFFECTS DETERMINATION

The project area contains ponderosa pine woodlands and rocky outcrops that may serve as suitable roosting habitat for the species. Based on the proposed action, potential impacts to the spotted bat

may result from tree thinning and noise generated by chainsaws and the wood chipper. Tree removal activity may negatively impact the roosting sites of the species. However, as described in Section 2.1, thinning treatments would retain 50 to 150 trees per acre and no spruce trees would be cut. Generally speaking, treatments would remove understory shrubs and trees 9 inch dbh or less. Noise may disturb roosting bats in the immediate treatment areas; however, noise disturbance would be temporary as the treatment areas are less than 25 acres in size each, and thus thinning activities would be completed during the daytime hours. Hence, the proposed project may temporarily impact individual spotted bats, but it is not likely to result in a trend toward federal listing, or loss of viability.

6.3 MIGRATORY BIRD TREATY ACT

The MBTA provides federal protection to all migratory birds, as well as their nests and eggs. In total, 31 bird species, several inactive stick nests, and more than 100 inactive passerine nests were observed during SWCA's field surveys (see Table 4.2). Most of the species observed during SWCA's survey occur in northern New Mexico during the breeding season and may nest in trees or in shrubs documented in the project area, such as Gambel oak. Potential impacts to migratory birds would vary depending on whether treatment activities occur within the migratory bird breeding season (March–August).

To the extent possible LAC fire department would limit thinning during the migratory bird breeding season (March–August); however, treatments are currently planned to be implemented year round in order to complete the project within the two year time period required by the project grant. If thinning occurs during the breeding season, it is recommended that nesting surveys be conducted prior to implementing thinning activities to identify any occupied nests and establish avoidance buffers until the young have fledged.

6.4 BALD AND GOLDEN EAGLE PROTECTION ACT

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act and the MBTA. In New Mexico, the bald eagle is found typically in association with water and nests only at a few undisclosed locations along lakes or streams in the northern and western portions of the state (Stahlecker and Walker 2010). The golden eagle nests primarily on rock ledges or cliffs, less often in large trees at elevations ranging from 4,000 to 10,000 feet (1,219–3,048 m) amsl, and is typically found in mountainous regions of open country, prairies, arctic and alpine tundra, open wooded areas, and barren areas. Both bald and golden eagles are carnivores. In New Mexico, bald eagles prey on fish but also on mammals, especially prairie dogs. Golden eagles feed mainly on small mammals, as well as invertebrates, carrion, and other wildlife (BISON-M 2017). Bald eagles are unlikely to occur in the project area due to the lack of large water bodies and preferred prey. Golden eagles may occur in the project area due to the presence of cliffs and rock outcrops. The proposed project is not anticipated to cause take of individual bald or golden eagles, their nests, or eggs.

7 CONCLUSION

Two federally listed species, the Mexican spotted owl and the Jemez Mountains salamander, may occur in the project area. The project area is outside of the critical habitat for both of these species.

In general, no long-term negative effects to either species are anticipated from the implementation of the proposed project.

In the long-term, implementation of the project should benefit both species by reducing the probability of large crown fires that may severly impact habitat. Reducing the risk of fires in this area will reduce chances for spread of fire to surrounding areas of suitable habitat. Additionally, the proposed action would use cut trees to develop water holding ponds and prevent erosion, which would directly benefit the Jemez Mountains salamander. Dispersing wood chips would help retain ground moisture which would also benefit salamander habitat.

Three conservation sensitive species, the wood lily, gray vireo and spotted bat, may also occur in the project area. The proposed project may impact individual wood lilies, gray vireos and spotted bats, but it is not likely to result in a trend toward federal listing, or loss of viability. See the mitigation measures below and project conservation measures in Appendix E to reduce potential impacts to special-status species.

In general, no major or long-term effects on migratory birds are anticipated from the implementation of the proposed project. If vegetation clearing occurs during the bird breeding season (March–August), pre-clearing nesting bird surveys are recommended to ensure avoidance of any occupied nests; however, incidental mortality or displacement is possible on a local scale. Plant communities present in the project area are widespread elsewhere and many birds occurring locally would likely move into adjacent habitats in response to temporary habitat loss.

Activities in the survey area are not expected to impact bald and golden eagles. No bald eagles were observed during the field survey, and golden eagles that may occur in the survey area likely would not be disturbed.

8 MITIGATION REQUIREMENTS

In addition to the Project Conservation Measures provided in Appendix E, Los Alamos County Fire Department must implement the following mitigation measures to reduce potential impacts to special-status species. Implementation of these measures is a condition of FEMA funding:

- Conduct nesting surveys prior to thinning vegetation during the migratory bird nesting and breeding season (March 1 –August 31) to identify any occupied nests and establish avoidance buffers until the young have fledged.
- Minimize impacts to terrestrial habitats by using existing roads and cleared staging areas.
- Implement conservation measures (i.e., Appendix E) to protect streams and wetlands.
- Avoid disturbing cliff structure in canyons.

Jemez Mountains salamander–specific mitigation:

- No treatments will be conducted in the North Horse Stable Bench and Walnut Bench treatment units from June 15 through October 30 to mitigate the potential for impacting Jemez Mountains salamander that may be in the area.
- Retain Douglas Fir in the North Horse Stable Bench and Walnut Bench treatment units, either standing or as felled logs to provide habitat for the Jemez Mountains salamander.

- Retain at least 50% canopy cover on north facing slopes in the North Horse Stable Bench and Walnut Bench treatment units to promote suitable habitat for (or to minimize impacts to potentially suitable habitat for) the Jemez Mountains salamander.
- Maintain large decaying coniferous logs in the project area to provide suitable habitat.
- Suitable habitat should be protected where possible from disturbance activities including the use of heavy equipment (compacting soil), or any activity that would desiccate or fragment the habitat.
- To mitigate indirect impacts to Jemez Mountains salamanders from soil compaction, off road use of wheeled equipment will be restricted to using one path in and out of each treatment unit.

Mexican spotted owl–specific mitigation:

- If work must take place during Mexican spotted owl breeding and nesting season from March 1 to August 31, nesting surveys must be conducted by a permitted biologist prior to project implementation in order to identify any occupied nests and establish avoidance buffers until the young have fledged.

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APPENDIX A
PROJECT AREA PHOTOGRAPHS

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Figure A.1. View of habitat within the Villa Bench treatment area facing southwest.

Figure A.2. View of habitat within the Villa Bench treatment area facing east.

Figure A.3. View of habitat within the Ponderosa Estates Road treatment area facing east.

Figure A.4. View of habitat within the Ponderosa Estates Road treatment area (with recreational trail in background) facing west.

Figure A.5. View of habitat within the Camino Redondo treatment area facing south.

Figure A.6. View of habitat and recreational trail within the Camino Redondo treatment area facing southeast.

Figure A.7. View of habitat within the Camino Uva treatment area facing south.

Figure A.8. View of habitat within the Camino Uva treatment area facing south.

Figure A.9. View of habitat within the Walnut Bench treatment area facing northwest.

Figure A.10. View of habitat within the Walnut Bench treatment area facing southwest.

Figure A.11. View of habitat within the North Loma Linda treatment area facing northwest.

Figure A.12. View of habitat within the North Loma Linda treatment area facing west.

Figure A.13. View of habitat within the North Horse Stable Bench treatment area facing northeast.

Figure A.14. View of habitat within the North Horse Stable Bench treatment area facing northwest.

Figure A.15. View of habitat within the North Horse Stable Bench treatment area facing west.

Figure A.16. View of habitat within the North Horse Stable Bench treatment area facing north.

Figure A.17. View of an existing electrical transmission line within the Walnut Bench treatment area facing northeast.

Figure A.18. View of a trash pile created by an American black bear within the Walnut Bench treatment area facing north.

Figure A.19. View of a pipeline bridge crossing Pueblo Creek within the Villa Bench treatment area facing southwest.

Figure A.20. View of cliff habitat adjacent to the North Horse Stable Bench treatment area facing north.

APPENDIX B
WATER FEATURE PHOTOGRAPHS

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Figure B.1. ST01 (Pueblo Creek) facing west.

Figure B.2. ST01 (Pueblo Creek) facing east.

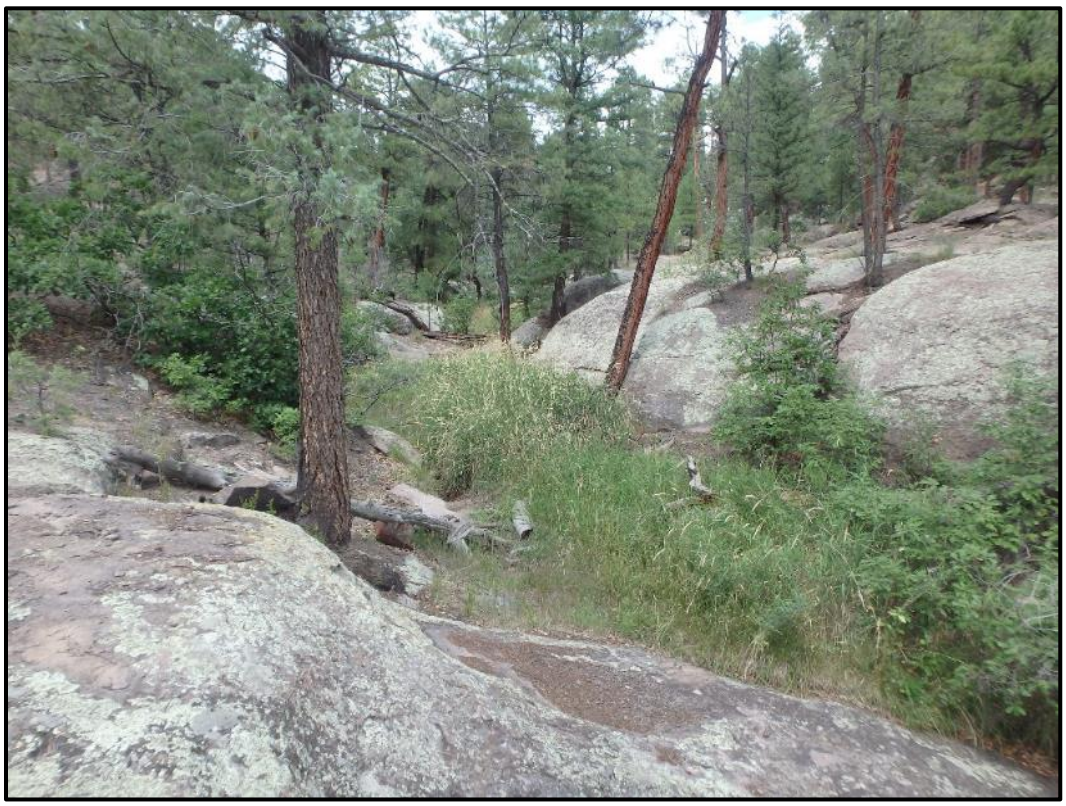

Figure B.3. DR01 facing north.

Figure B.4. DR01 facing southeast.

Figure B.5. DR02 facing north.

Figure B.6. DR02 facing south.

Figure B.7. DR03 facing north.

Figure B.8. DR03 facing south.

Figure B.9. DR04 facing north.

Figure B.10. DR04 facing south.

Figure B.11. DR05 facing north.

Figure B.12. DR05 facing south.

Figure B.13. DR06 facing north.

Figure B.14. DR06 facing south.

Figure B.15. DR07 facing north.

Figure B.16. DR07 facing south.

Figure B.17. DR08 facing south.

Figure B.18. DR08 facing north.

Figure B.19. DR09 facing southwest.

Figure B.20. DR09 facing northeast.

Figure B.21. Wetland 1 facing northeast.

Figure B.22. Wetland 1 facing south.

Figure B.23. Wetland 2 facing northeast.

Figure B.24. Wetland 2 facing south.

APPENDIX C
PROJECT AREA SOILS

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SOIL DESCRIPTIONS

CARJO LOAM, 1 TO 9 PERCENT SLOPES

Carjo loam soils occur across all treatment areas at varying percentages (see Table 4.5). The runoff class is high. The depth to a restrictive feature is greater than 20 to 40 inches (51–102 cm). This soil is well drained. The slowest soil permeability within a depth of 60 inches (152 cm) is very slow. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet (1.8 m). It is irrigated land capability subclass not specified. It is nonirrigated land capability subclass 5c. This component is not a hydric soil and is not considered farmland of statewide importance.

ROCK OUTCROP-HACKROY COMPLEX, 1 TO 8 PERCENT SLOPES

Rock outcrop-Hackroy complex soils occur across all treatment areas at varying percentages (see Table 4.5). The runoff class is very high. The depth to a restrictive feature is 0 inches. This soil is well drained. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet (1.8 m). It is nonirrigated land capability subclass 8s. This component is not a hydric soil and is not considered farmland of statewide importance.

ROCK OUTCROP

Rock outcrop soils occur across all treatment areas at varying percentages (see Table 4.5). Its irrigated land capability is unspecified. It is nonirrigated land capability subclass 8s. This component is not a hydric soil.

HACKROY-NYJACK ASSOCIATION, 1 TO 5 PERCENT SLOPES

Pajarito soils make up 13 percent of the North Horse Stable Bench map unit. The runoff class is medium. The depth to a restrictive feature is greater than 20 to 40 inches (51–102 cm). This soil is well drained. Available water capacity to a depth of 60 inches (152 cm) is moderately low. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet (1.8 m). Its irrigated land capability is unspecified. It is nonirrigated land capability subclass 6c. This component is not a hydric soil.

MIRAND-ALANOS COMPLEX, 5 TO 40 PERCENT SLOPES

Mirand-Alanos complex soils make up 52 percent of the Ponderosa Estates Range Road map unit. The runoff class is medium. The depth to a restrictive feature is greater than 80 inches (203 cm). This soil is well drained. The slowest soil permeability within a depth of 60 inches (152 cm) is moderately low. Available water capacity to a depth of 10.9 inches (27.7 cm) is high. Annual flooding is none, and annual ponding is none. The minimum depth to a water table is greater than 6 feet (1.8 m). Its irrigated land capability subclass is unspecified. It is nonirrigated land capability subclass 7c. This component is not a hydric soil.

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APPENDIX D
USFWS OFFICIAL SPECIES LIST

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
Phone: (505) 346-2525 Fax: (505) 346-2542
http://www.fws.gov/southwest/es/NewMexico/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

In Reply Refer To:
Consultation Code: 02ENNM00-2017-SLI-1066
Event Code: 02ENNM00-2017-E-02233
Project Name: Los Alamos Co Fire Dept EA

September 20, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of New Mexico wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally-listed species, consultation with the Service will be necessary. Through the consultation process, we will analyze information contained in a biological assessment that you provide. If your proposed action is associated with

Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a habitat conservation plan) is necessary to harm or harass federally listed threatened or endangered fish or wildlife species. In either case, there is no mechanism for authorizing incidental take "after-the-fact." For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

The scope of federally listed species compliance not only includes direct effects, but also any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects that may occur in the action area. The action area includes all areas to be affected, not merely the immediate area involved in the action. Large projects may have effects outside the immediate area to species not listed here that should be addressed. If your action area has suitable habitat for any of the attached species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts.

Candidate Species and Other Sensitive Species

A list of candidate and other sensitive species in your area is also attached. Candidate species and other sensitive species are species that have no legal protection under the ESA, although we recommend that candidate and other sensitive species be included in your surveys and considered for planning purposes. The Service monitors the status of these species. If significant declines occur, these species could potentially be listed. Therefore, actions that may contribute to their decline should be avoided.

Lists of sensitive species including State-listed endangered and threatened species are compiled by New Mexico state agencies. These lists, along with species information, can be found at the following websites:

Biota Information System of New Mexico (BISON-M): www.bison-m.org

New Mexico State Forestry. The New Mexico Endangered Plant Program: www.emnrd.state.nm.us/SFD/ForestMgt/Endangered.html

New Mexico Rare Plant Technical Council, New Mexico Rare Plants: nmrareplants.unm.edu

Natural Heritage New Mexico, online species database: nhnm.unm.edu

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

BALD AND GOLDEN EAGLES

The bald eagle (Haliaeetus leucocephalus) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (Aquila chrysaetos) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at www.fws.gov/midwest/eagle/guidelines/bgepa.html.

On our web site www.fws.gov/southwest/es/NewMexico/SBC_intro.cfm, we have included conservation measures that can minimize impacts to federally listed and other sensitive species. These include measures for communication towers, power line safety for raptors, road and highway improvements, spring developments and livestock watering facilities, wastewater facilities, and trenching operations.

We also suggest you contact the New Mexico Department of Game and Fish, and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division for information regarding State fish, wildlife, and plants.

Thank you for your concern for endangered and threatened species and New Mexico's wildlife habitats. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further consultation on your proposed activity, please call 505-346-2525 or email nmesfo@fws.gov and reference your Service Consultation Tracking Number.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
(505) 346-2525

Project Summary

Consultation Code: 02ENNM00-2017-SLI-1066

Event Code: 02ENNM00-2017-E-02233

Project Name: Los Alamos Co Fire Dept EA

Project Type: FORESTRY

Project Description: Forest restoration project for an Environmental Assessment of areas located in Los Alamos County at several separate locations. The objective is to reduce the amount of fuels both standing and on the ground to prevent the potential spread of wildfire into developed areas on County lands.

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/35.8924839634155N106.31207450474471W

Counties: Los Alamos, NM

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
New Mexico Meadow Jumping Mouse *Zapus hudsonius luteus* There is **final designated** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7965	Endangered

Birds

NAME	STATUS
Mexican Spotted Owl *Strix occidentalis lucida* There is **final designated** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final designated** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Jemez Mountains Salamander *Plethodon neomexicanus* There is **final designated** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4095	Endangered

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

APPENDIX E
PROJECT CONSERVATION MEASURES

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No permits would be required for the Porposed Action. Activities in the project area would comply with the project's scope of work methodology described in Section 3 Proposed Action. The Los Alamos County Fire Department is responsible for implementing best management practices to control erosion and sediment, reduce spills and pollution, and provide habitat protection. Any change to the approved scope of work described in this EA as the proposed action will require re-evaluation for compliance with NEPA and other applicable laws and regulations. Below is a list conservation measures that the County is committed to following during project implementation.

SOILS, WATER, AND VEGETATION RESOURCES

- Off road use of wheeled equipment would only occur during times when soils are dry to minimize soil compaction, soil displacement, rutting and erosion, as well as to mitigate impacting Jemez Mountains salamander that may occupy the area and are known to be active on the surface during wet conditions.
- No wheeled equipment would be allowed within a 100-foot buffer zone from wetlands and streams in order to mitigate disturbance of riparian and wetland vegetation, to protect soils from compaction and other disturbances, and to protect water quality.
- Vegetation encroaching on wetland areas and less than 10 feet tall would be cut by hand 6 inches above ground, with no ground disturbance.
- No chipped materials would be dispersed into water bodies and no trees would be felled into water bodies.
- The accumulation of chipped materials would be limited to an average maximum of 4 inches deep and spread evenly throughout the treatment area. This would allow for grasses and other ground vegetation to grow up through the shredded woody mulch and help retain ground moisture.
- Vehicles and equipment would be cleaned of soil and debris capable of transporting weed seed prior to beginning work in each treatment area to prevent the spread of noxious weeds.
- Water bars would be created from 8 foot long ponderosa pine trees cut in the vicinity and installed on steep slopes to minimize erosion.
- No thinning would be conducted on slopes greater than 25 percent.

WILDLIFE RESOURCES

- In compliance with the MBTA and BGEPA, cutting or removing vegetation, including snags, would occur outside of the migratory bird breeding season (March 1—August 31). If vegetation removal cannot avoid the bird breeding season, nesting surveys would be completed prior to project implementation to identify any occupied nests and establish avoidance buffers until the young have fledged.
- No treatments will be conducted in the North Horse Stable Bench and Walnut Bench treatment units from June 15 through October 30 to mitigate the potential for impacting Jemez Mountains salamanders that may be in the area.
- Retain Douglas fir in the North Horse Stable Bench and Walnut Bench treatment units, either standing or as felled logs to provide habitat for the Jemez Mountains salamander.

- To mitigate indirect impacts to Jemez Mountains salamander from soil compaction, off road use of wheeled equipment will be restricted to using one path in and out of each treatment unit.
- Off road use of wheeled equipment would only occur during times when soils are dry to minimize soil compaction, soil displacement, rutting and erosion, as well as to mitigate impacting Jemez Mountains salamanders that may occupy the area.
- Retain at least 50% canopy cover on north facing slopes in the North Horse Stable Bench and Walnut Bench treatment units to promote suitable habitat for (or to minimize impacts to potentially suitable habitat for) Jemez Mountains salamander.
- Maintain large decaying coniferous logs in the project area to provide suitable habitat for Jemez Mountains salamander.

CULTURAL AND HISTORIC RESOURCES

- In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity shall be discontinued, the area secured, and the SHPO and FEMA notified.

PUBLIC HEALTH, SAFETY AND NOTIFICATION

- Personnel and public safety would be the highest priority when implementing thinning activities.
- The Los Alamos Fire Department would coordinate treatment schedules with affected parties in the vicinity of the thinning area, including adjacent property and business owners, schools, public places, Los Alamos National Laboratory, County departments, historical society, user groups, and other interested parties.
- The public would be notified of upcoming thinning projects through press releases, signs posted in the area, and through updates posted on the Project website.
- Educational outreach would be implemented prior to, during, and after implementing the thinning treatments to explain the importance of creating defensible space and mitigating wildfire hazard in and around population centers.
- To minimize any potential to occupation safety and health, construction workers and equipment operators are required to wear appropriate personal protective equipment (PPE) and to be properly trained for the work being performed, including removal and disposal of asbestos and lead-based paint for demolition projects.
- Transport of personnel and equipment would use existing roads.
- Project implementation noise levels would be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Impact to noise levels would be minimized by limiting construction activities that occur during early morning or late evening hours.
- All waste material associated with the project must be disposed of properly and not placed in identified floodway or wetland areas or in habitat for ESA-listed species.

APPENDIX F
PROJECT FIELD SURVEY SUMMARY AND NOTES

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The following is a brief summary of my field survey for the Los Alamos FEMA EA project on August 22, and 23rd, 2017.

On August, 22, 2017, SWCA Biologist Ian Dolly surveyed the following project areas. Villa Bench, Ponderosa Estates, Camino Redondo, and Camino Uva. Overall, the field surveys yielded a few notable things: Each project area has at least one jurisdictional drainage (10 drainages overall). Villa Bench contains a small jurisdictional waterbody (ST01, Pueblo Creek) which could be potential flyacatcher habitat, however, the stream only briefly crosses a small portion of the PPA. In addition to a jurisdictional drainage, Camino Uva has two small wetlands at the northcentral portion of the PPA. Finally, the Easternmost North Horse Stables PPA has potential peregrine and Mexican spotted owl nesting habitat in the form of sheer cliffs immediately to the north of the PPA (Pueblo Canyon). The cliffs are outside the PPA. I've provided a breakdown of each survey below:

Villa Bench

Description: an approx. 17 acre polygon situated in northwest Los Alamos within Pueblo Canyon. Access is via Homestead Trail trailhead (381540.29, 3973113.25) across the street (southwest) of Aspen Elementary School on 33rd St. Parking is located at Homestead trail trailhead. Project area has numerous trails which are frequented by locals. Pueblo creek impacts a small portion of the PA in south central part of the polygon, which may be southwestern willow flycatcher habitat.

Habitat: Ponderosa pine forest. Slopes between 1-40%. Cover: 60%, T:50%, S: 30%, H: 10%, L:20 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within canyons and drainages. Mid and understory composed of Gray Alder, Gambel oak, Alder-leaf mountain mahogany, and Arizona mountain-ash.

Waterbodies:

- ST01 (pueblo creek) facing W and E
  - Approx. 4' bank to bank
  - OHWM: 2'x1'
  - Could not access, too steep and loaded with poison ivy.
  - Potential flycatcher mouse habitat, but not sure. Potential SWFL habitat.
- DR01 facing N and SE
  - OHWM 1'x6"
  - Rocky and vegetated
  - cover 40%
  - pools of water present from recent rain.
- DR02 facing N and S
  - OHWM: 1'x6"
  - rocky
  - sparsely vegetated, cover 10%

Ponderosa Estates

Description: An approx. 22 acre polygon situated in northern Los Alamos. Access is via Range Rd where there is trail access @382545.63, 3974246.01 approximately 2 miles north of intersection of Diamond Rd and Range Rd on the right. A small drainage runs N->S through the entire Western half of the PPA (DR03).

Habitat: Ponderosa pine forest. Slopes between 1-40%. Habitat is open with grassy meadows in between tree stands. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within only drainage. Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany.

Waterbodies:

- DR03 facing N and S
    - OHWM: 3'x6"
    - Rocky, gravelly,
    - Vegetated, 40% cover

Camino Redondo

Summary: An approx. 6 acre polygon situated in northern Los Alamos. Access is via San Ildefonso Rd where access can be found via Camino Redondo Rd. It's best to park on Camino Redondo and walk east approximately .25 along the sidewalk to the PPA.

Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat is open with grassy meadows in between tree stands. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within only drainage. Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. A drainage begins at the south central portion of the PPA and flows south toward Pueblo Canyon.

Waterbodies:

- DR04 facing N and S
- OHWM: 1'x6"
- Rocky

Camino Uva

Summary: An approx. 7 acre polygon situated in northern Los Alamos. Access is via San Ildefonso Rd where access can be found via Camino Redondo Rd. It's best to park on Camino Redondo and walk east approximately .25 along the sidewalk to the PPA.

Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat is open with grassy meadows in between tree stands. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within only drainage. Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. A drainage begins at the south central portion of the PPA and flows south toward Pueblo Canyon. Two small wetlands were found in the north central portion of the PPA.

Waterbodies:

- DR05 facing N and S
    - Rocky
    - OHWM: 1'x6"
- Wetland 1:
    - Fed by small spring
    - Small wetland (approx. 10'x10')
    - Aquatic plants (sedges)

    - Hydric soils
- Wetland 2:
    - Small wetland fed by runoff and/or small spring from San Ildefonso Road
    - Approximately 40'x40'
    - Sedges, cattails
    - Hydric soils

Walnut Bench

Summary: An approx. 19 acre polygon situated in northwestern Los Alamos. Access is via 33rd street at the Walnut Canyon Rim Trail trailhead @381505.00, 3973428.00.

Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat consists of pine forest with dense mid and understory within a large drainage feature that runs the length of the PPA N->S. As drainage widens, mid and understory grows less dense. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. Drainage begins at north end of PPA and continues southward.

Waterbodies:

- DR06 facing N and S
    - Begins as 3'x1.5' but widens to over 20'x20' drainage.
    - Rocky

Lower Loma Linda

Summary: An approx. 7 acre polygon situated in northcentral Los Alamos. Access is via San Ildefonso Rd approx. 0.1 miles south of the intersection of San Illdefonso Rd and Diamond Rd. Access and parking can be found @382716.00, 3973354.00.

Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat consists of pine forest with dense mid and understory within a large drainage feature in the northern portion of the PPA. Mid and understory grows is dense within the drainage.. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. Drainage begins at north end of PPA and continues southward before slightly turning west and leaves the PPA.

Waterbodies:

- DR07 facing N and S
    - OHWM: 3'x6"
- DR08 Facing N and S
    - OHWM: 2'x6"

North Horse Stables

Summary: An approx. 8 acre polygon situated in northcentral Los Alamos. Access is via N Mesa Road at the North Mesa Picnic Area.

Habitat: Ponderosa pine forest. Slopes between 1-90%. Habitat consists of pine forest with dense mid and understory within a large drainage feature in the northern portion of the PPA. Mid and

understory is dense within the drainage. Cover: 70%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory mostly composed of of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. Drainage begins at southwestern corner of PPA via a culvert and continues northwestward before leaving the PPA.

Waterbodies:

- DR09 facing S and N
    - OHWM: 1'x6"
    - Rocky

North Horse Stables (Easternmost PPA)

Summary: An approx. 15 acre polygon situated in northeastern Los Alamos. Access is via N Mesa Road and the Kwage Mesa Trail trailhead @384750.00, 3972746.00.

Habitat: A mixture of Ponderosa pine forest and pinyon juniper woodland. Slopes between 1-90%. Habitat on the western half of PPA consists of pine forest with dense mid and understory within a large drainage feature in the northern portion of the PPA. Eastern half of PPA is mostly pinyon-juniper woodland with dense mid and understory. Cover: 70%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory mostly composed of Gambel oak, and Alder-leaf mountain mahogany, apache plume, and one-seed juniper. Drainage begins at western end of PPA and continues northeast 0.5 miles until it leaves the PPA.

Waterbodies:

- DR10 facing SW and NE
    - OHWM: 2'x6"
    - Rocky

Los Alamos EA: Villa Bench

Date: 8-22-17 Personnel: I. Dolly Project# 43884

Weather: Partly cloudy, calm, 70° F

Summary: An approx. 17 acre polygon situated in northwest Los Alamos within Pueblo Canyon. Access is via Homestead Trail trailhead (381540.29, 3973113.25) across the street (southwest) of Aspen Elementary School on 33rd St. Parking is located at Homestead trail trailhead. Project area has numerous trails which are frequented by locals. Pueblo creek impacts a small portion of the PA in south central part of the polygon, which may be meadow jumping mouse habitat.

Habitat: Ponderosa pine forest. Slopes between 1-40%. Cover: 60%, T:50%, S: 30%, H: 10%, L:20 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within canyons and drainages. Mid and understory composed of Gray Alder, Gambel oak, Alder-leaf mountain mahogany, and Arizona mountain-ash.

Photos#/Notes

1-4. Begin at Northcentral tip of PPA facing N, E, S, and W
5. Overview from north central tip of PPA facing south
6. Overview from North central tip of PPA facing East
7. Overview from West Central part of PPA facing East
8-10. ST01 (pueblo creek) facing W and E
    -Approx. 4' bank to bank
    -OHWM: 2'x1'
    -Could not access, too steep and loaded with poison ivy.
    -Potential flycatcher mouse habitat, but not sure. Potential SWFL habitat.
11. Overview from south central part of PPA facing East
12. Overview from south central part of PPA facing North
13-14 DR01 facing N and SE
    -OHWM 1'x6"
    -Rocky and vegetated
    -cover 40%
    -pools of water present from recent rain.
15. Overview from southeastern part of PPA facing NW
16-19. DR02 facing N and S
    -OHWM: 1'x6"
    -rocky
    -sparsely vegetated, cover 10%
20-21. Oil and gas (presumably) infrastructure. Bridge with pipelines running N->S across pueblo canyon. Photos facing south.
22. Foot Bridge facing south. Bridge crosses Pueblo Canyon.
23. View of Pipeline Bridge mentioned in photos 20-21, facing southwest.
24. Overview from southeastern portion of PPA facing west
25. Overview from southeastern portion of PPA facing west showing hiking trail.
26. Overview from Southwestern portion of PPA facing north
27. Overview from Top of ridge on north side of west half of PPA facing southwest
28. Overview from Top of ridge on north side of west half of PPA facing southwest
29. Overview from Top of ridge on north side of west half of PPA facing west
30. Overview of some small cliffs along ridge that runs the length of the northwestern side of PPA
31. Overview from north central part of PPA facing southwest.

Flora

Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*
Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
Narrowleaf willow *Salix exigua*
Gooding's willow *Salix gooddingii*
Western poison Ivy *Toxicodendron rydbergii*
New Mexico locust *Robinia neomexicana*
White fir *Abies concolor*
Common juniper *Juniperus communis*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*
Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*

Fauna

American black bear *Ursus Americana*
Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven
Pygmy nuthatch
Black-chinned hummingbird
Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow
Rufous hummingbird
Plumbeous vireo
White-breasted nuthatch

Los Alamos EA: Ponderosa Estates Range Road

Date: 8-22-17 Personnel: I. Dolly Project# 43884

Weather: Mostly cloudy, rain clouds looming, calm, 70° F

Summary: An approx. 22 acre polygon situated in northern Los Alamos. Access is via Range Rd where there is trail access @382545.63, 3974246.01 approximately 2 miles north of intersection of Diamond Rd and Range Rd on the right. A small drainage runs N->S through the entire Western half of the PPA (DR03).

Habitat: Ponderosa pine forest. Slopes between 1-40%. Habitat is open with grassy meadows in between tree stands. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within only drainage. Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany.

Photos#/Notes

1-3. Begin at northwestern corner of PPA facing NE, E, and SE
4-7. Overview at southeastern corner of PPA facing N, E, S, and W.
8-10. Overview at Northwestern corner of PPA facing W, NW, and E.
11-14. Overview from Center of PPA facing N, E, S, and W.
15-18. Overview from Northeastern corner of PPA facing N, E, S, W
19-22. DR03 facing N and S
- -OHWM: 3'x6"
- -Rocky, gravelly,
- -Vegetated, 40% cover

Flora

Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*
Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
New Mexico locust *Robinia neomexicana*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*
Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*

New flora

Annual ragweed *Ambrosia artemisiifolia*
Sunflower *Helianthus sp.*
Nodding onion *Allium cernuum*
Squirreltail *Elymus elymoides*
Dock *Rumex sp.*
Gosseberry currant *Ribes montigenum*
Soaptree yucca *Yucca elata*
Pine dropseed *Blepharoneuron tricholepis*

Rubber rabbitbrush *Ericameria nauseosa*
Primrose species *Ludwigia sp*

Horseweed *Erigeron Canadensis*
Ash species *Fraxinus sp.*

Fauna

Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven
Pygmy nuthatch
Black-chinned hummingbird

Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow
Rufous hummingbird
Plumbeous vireo
White-breasted nuthatch

New Fauna

Zone-tailed hawk
Turkey vulture
Lesser goldfinch
Western wood pewee
Mountain chickadee

Los Alamos EA: Camino Redondo

Date: 8-22-17 **Personnel:** I. Dolly Project# 43884

Weather: Partly cloudy, calm, 75° F

Summary: An approx. 6 acre polygon situated in northern Los Alamos. Access is via San Ildefonso Rd where access can be found via Camino Redondo Rd. It's best to park on Camino Redondo and walk east approximately .25 along the sidewalk to the PPA.

Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat is open with grassy meadows in between tree stands. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within only drainage. Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. A drainage begins at the south central portion of the PPA and flows south toward Pueblo Canyon.

Photos#/Notes

1-3. Begin survey at Northwestern corner of PPA facing E, SE, and S
4-7. Overview from SW corner of PPA facing N, E, SE, W
8-9. DR04 facing N and S
-rocky
-OHWM 1'x6"
10-13. Overview from SE corner of PPA facing N, E, S, W
14-17. Overview from Center of PPA facing N, E, S, W.
18-21. Overview from the NE corner of PPA facing N, E, S, W.

Flora

Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*
Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
New Mexico locust *Robinia neomexicana*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*
Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*
Annual ragweed *Ambrosia artemisiifolia*
Sunflower *Helianthus sp.*
Nodding onion *Allium cernuum*
Squirreltail *Elymus elymoides*
Dock *Rumex sp.*
Gosseberry currant *Ribes montigenum*
Soaptree yucca *Yucca elata*
Pine dropseed *Blepharoneuron tricholepis*
Rubber rabbitbrush *Ericameria nauseosa*
Primrose species *Ludwigia sp*
Horseweed *Erigeron Canadensis*
Ash species *Fraxinus sp.*

Fauna

Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven

Pygmy nuthatch
Black-chinned hummingbird
Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow
Rufous hummingbird
Plumbeous vireo
White-breasted nuthatch
Turkey vulture
Lesser goldfinch
Western wood pewee
Mountain chickadee

Los Alamos EA: Camino Uva

Date: 8-22-17 Personnel: I. Dolly Project# 43884

Weather: Partly cloudy, calm, 75° F

Summary: An approx. 7 acre polygon situated in northern Los Alamos. Access is via San Ildefonso Rd where access can be found via Camino Redondo Rd. It's best to park on Camino Redondo and walk east **approximately .25 along the sidewalk to the PPA.**

Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat is open with grassy meadows in between tree stands. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Thick understory within only drainage. Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. A drainage begins at the south central portion of the PPA and flows south toward Pueblo Canyon. Two small wetlands were found in the north central portion of the PPA.

Photos#/Notes

1-4. Begin at NE corner of PPA facing N, E, S, W
5-8. Overview from SE corner facing N, E, S, W
9-12. Overview from Center of PPA facing N, E, S, W
13-14. DR05 facing N and S
- -Rocky
- -OHWM: 1'x6"

15-18. Overview from SW corner facing N, E, S, W
19-22. Overview from NW corner facing N, E, S, W
23-26. Wetland 1 facing W, N, NE, SE
27-30. Wetland 2 facing N, E, NE, S
31-33. Wetland pit 2
34. Upland pit 2
35-36 Wetland pit 1
37. Upland pit 1
38-39. Wetland pit 3
40. Upland pit 3

Flora

Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*
Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
New Mexico locust *Robinia neomexicana*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*
Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*
Annual ragweed *Ambrosia artemisiifolia*
Sunflower *Helianthus sp.*
Nodding onion *Allium cernuum*
Squirreltail *Elymus elymoides*

Dock *Rumex sp.*
Gosseberry currant *Ribes montigenum*
Soaptree yucca *Yucca elata*
Pine dropseed *Blepharoneuron tricholepis*
Rubber rabbitbrush *Ericameria nauseosa*
Primrose species *Ludwigia sp*
Horseweed *Erigeron Canadensis*
Ash species *Fraxinus sp.*

New Flora

Woolyfruit sedge *Carex lasiocarpa*
Tufted-stem rush *Juncus brachyphyllus*
Broad-leafed cattail *Typha latifolia*

Fauna

Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven
Pygmy nuthatch
Black-chinned hummingbird
Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow
Rufous hummingbird
Plumbeous vireo
White-breasted nuthatch
Turkey vulture
Lesser goldfinch
Western wood pewee
Mountain chickadee

Los Alamos EA: Walnut Bench

Date: 8-23-17 Personnel: I. Dolly Project# 43884

Weather: Clear, sunny, calm, 70° F

Summary: An approx. 19 acre polygon situated in northwestern Los Alamos. Access is via 33rd street at the Walnut Canyon Rim Trail trailhead @381505.00, 3973428.00.

Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat consists of pine forest with dense mid and understory within a large drainage feature that runs the length of the PPA N->S. As drainage widens, mid and understory grows less dense. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. Drainage begins at north end of PPA and continues southward.

Photos#/Notes

1-4. Begin @center, west boundary along 33rd street facing N, E, S, W.
5-6. DR06 facing N and S
    -Begins as 3'x1.5' but widens to over 20'x20' drainage.
7-9. North boundary facing NE, E, SE
    -culvert
    -beginning of DR06
10. Overview from upper east side of PPA facing southeast

-walnut canyon
11-13. Overview from SE side of PPA facing SE, SW, W
14-15. Overview from south end of PPA facing W and NW
16-19. Overview from SW side of PPA facing N, E, S, W
20-21. Overview from Center of PPA facing N and S
22. Bear trash pile- there are numerous trash piles from bears that get into trash cans.
23-24. Overview from north central portion of PPA facing N and S.
-End

Flora

Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*
Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
New Mexico locust *Robinia neomexicana*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*
Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*
Annual ragweed *Ambrosia artemisiifolia*
Sunflower *Helianthus sp.*
Nodding onion *Allium cernuum*
Squirreltail *Elymus elymoides*
Dock *Rumex sp.*
Gosseberry currant *Ribes montigenum*
Soaptree yucca *Yucca elata*
Pine dropseed *Blepharoneuron tricholepis*
Rubber rabbitbrush *Ericameria nauseosa*
Primrose species *Ludwigia sp*
Horseweed *Erigeron Canadensis*
Ash species *Fraxinus sp.*

New flora

Curly-cupped gumweed
Sweet clover
Russian Knapweed

Fauna

Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven
Pygmy nuthatch
Black-chinned hummingbird
Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow
Rufous hummingbird
Plumbeous vireo

White-breasted nuthatch
Turkey vulture
Lesser goldfinch
Western wood pewee
Mountain chickadee

New Fauna
Cordilleran flycatcher
Bushtit
Mountain cottontail *sylvolagus nuttallii*
American robin
Evening grosbeak
Chipping sparrow
Brown creeper
House wren
Green-tailed towhee

Los Alamos EA: Lower Loma Linda

Date: 8-23-17 Personnel: I. Dolly Project# 43884
Weather: Partly cloudy, calm, 70° F
Summary: An approx. 7 acre polygon situated in northcentral Los Alamos. Access is via San Ildefonso Rd approx. 0.1 miles south of the intersection of San Illdefonso Rd and Diamond Rd. Access and parking can be found @382716.00, 3973354.00.
Habitat: Ponderosa pine forest. Slopes between 1-60%. Habitat consists of pine forest with dense mid and understory within a large drainage feature in the northern portion of the PPA. Mid and understory grows is dense within the drainage.. Cover: 60%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory composed of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. Drainage begins at north end of PPA and continues southward before slightly turning west and leaves the PPA.

Photos#/Notes
1-3. Overview from NW corner of PPA facing S, SW, W
4-6. Overview from NE corner facing E, SE, and S
7-8. DR07 facing N and S
-OHWM 3'x6"
9-11. Overview from north central portion of PPA facing W, NW, N
12-15. Overview from center of PPA facing N, E, S, W
16-18. Overview from SE end of PPA facing SE, S, SW
19-22. Overview from S end of PPA facing S, SW, W and NW
23-26. Overview from south central portion of PPA facing N, E, S, W
27-28. DR08. Facing N and S
-2'x6"
-End. Beginning to rain. 66 deg F

Flora
Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*

Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
New Mexico locust *Robinia neomexicana*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*
Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*
Annual ragweed *Ambrosia artemisiifolia*
Sunflower *Helianthus sp.*
Nodding onion *Allium cernuum*
Squirreltail *Elymus elymoides*
Dock *Rumex sp.*
Gosseberry currant *Ribes montigenum*
Soaptree yucca *Yucca elata*
Pine dropseed *Blepharoneuron tricholepis*
Rubber rabbitbrush *Ericameria nauseosa*
Primrose species *Ludwigia sp*
Horseweed *Erigeron Canadensis*
Ash species *Fraxinus sp.*
Curly-cupped gumweed
Sweet clover
Russian Knapweed

Fauna

Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven
Pygmy nuthatch
Black-chinned hummingbird
Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow
Rufous hummingbird
Plumbeous vireo
White-breasted nuthatch
Turkey vulture
Lesser goldfinch
Western wood pewee
Mountain chickadee
Cordilleran flycatcher
Bushtit
Mountain cottontail *sylvolagus nuttallii*
American robin
Evening grosbeak
Chipping sparrow
Brown creeper
House wren
Green-tailed towhee

Los Alamos EA: North Horse Stable Bench 1

Date: 8-23-17 Personnel: I. Dolly Project# 43884
Weather: Partly cloudy, calm, 60° F
Summary: An approx. 8 acre polygon situated in northcentral Los Alamos. Access is via N Mesa Road at the North Mesa Picnic Area.
Habitat: Ponderosa pine forest. Slopes between 1-90%. Habitat consists of pine forest with dense mid and understory within a large drainage feature in the northern portion of the PPA. Mid and

understory is dense within the drainage. Cover: 70%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory mostly composed of of Gray Alder, Gambel oak, and Alder-leaf mountain mahogany. Drainage begins at southwestern corner of PPA via a culvert and continues northwestward before leaving the PPA.

Photos#/Notes

1-4. Overview from Center of PPA facing N, E, S, W
5-6. DR09 facing S and N
7-9. Overview from NW corner facing E, S, SW
10-11. Overview from northcentral portion of PPA facing NE and SW
12-14. Overview from SE corner facing W, NW, NE
15-18. Overview from SW corner facing E, NE, NW, W
19-20. DR09 Begins facing NE, SW
-End

Flora

Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*
Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
New Mexico locust *Robinia neomexicana*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*
Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*
Annual ragweed *Ambrosia artemisiifolia*
Sunflower *Helianthus sp.*
Nodding onion *Allium cernuum*
Squirreltail *Elymus elymoides*
Dock *Rumex sp.*
Gosseberry currant *Ribes montigenum*
Soaptree yucca *Yucca elata*
Pine dropseed *Blepharoneuron tricholepis*
Rubber rabbitbrush *Ericameria nauseosa*
Primrose species *Ludwigia sp*
Horseweed *Erigeron Canadensis*
Ash species *Fraxinus sp.*
Curly-cupped gumweed
Sweet clover
Russian Knapweed

Fauna

Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven
Pygmy nuthatch
Black-chinned hummingbird
Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow

Rufous hummingbird
Plumbeous vireo
White-breasted nuthatch
Turkey vulture
Lesser goldfinch
Western wood pewee
Mountain chickadee
Cordilleran flycatcher
Bushtit
Mountain cottontail *sylvolagus nuttallii*
American robin
Evening grosbeak
Chipping sparrow
Brown creeper
House wren
Green-tailed towhee

Los Alamos EA: North Horse Stable Bench 2 (Easternmost)

Date: 8-23-17 Personnel: I. Dolly Project# 43884
Weather: Partly cloudy, calm, 60° F
Summary: An approx. 15 acre polygon situated in northeastern Los Alamos. Access is via N Mesa Road and the Kwage Mesa Trail trailhead @384750.00, 3972746.00.
Habitat: A mixture of Ponderosa pine forest and pinyon juniper woodland. Slopes between 1-90%. Habitat on the western half of PPA consists of pine forest with dense mid and understory within a large drainage feature in the northern portion of the PPA. Eastern half of PPA is mostly pinyon-juniper woodland with dense mid and understory. Cover: 70%, T: 40%, S: 20%, H: 30%, L:10 %. (Trees, Shrubs, Herbs/Grass, Litter). Mid and understory mostly composed of Gambel oak, and Alder-leaf mountain mahogany, apache plume, and one-seed juniper. Drainage begins at western end of PPA and continues northeast 0.5 miles until it leaves the PPA.

Photos#/Notes

1-2. DR10 facing SW and NE
-rocky
-2'x6"
3-5. Overview of north end PPA facing NE, E, SE
6-9. Overview from center of PPA facing N, E, S, W.
-fuels: gambel oak, mountain mahogany, juniper
10-13. Overview from western ¼ of PPA facing N, E, S, W.
14-16. Overview from southern ¼ of PPA facing W, N, E
17-18. Overview from South end of PPA facing W, NW, N
-End: Cloudy, sprinkling, 65 deg F

Flora

Plains pricklypear *Opuntia polyacantha*
Ponderosa Pine *Pinus ponderosa*
Western purple cranesbill *Geranium atropurpureum*
Douglas fir Pseudotsuga menziesii
One-seed juniper *Juniperus monosperma*
Parry's goldenrod *Oreochrysum parryi*
Apache plume *Fallugia paradoxa*
New Mexico locust *Robinia neomexicana*
Lechuguilla *Agave lechuguilla*
Erigeron flagellaris
Senecio neomexicana
Prairie sagewort *Artemisia frigida*
Western wheatgrass *Pascopyrum smithii*
Scarlet gilia *Ipomopsis aggregata*
Cardinal beardtongue *Penstemon cardinalis*
Quaking Aspen *Populus tremuloides*
Alderleaf mountain mohagany *Cercocarpus montanus*
Common mullein *Verbascum thapsus*

Bigelow's tansy aster *machaeranthera bigelovii*
Russian olive *Elaeagnus angustifolia*
Gray alder *Alnus incana*
Arizona mountain-ash Sorbus dumosa
Western red columbine *Aquilegia elegantula*
Blue grama *Bouteloua gracilis*
Annual ragweed *Ambrosia artemisiifolia*
Sunflower *Helianthus sp.*
Nodding onion *Allium cernuum*
Squirreltail *Elymus elymoides*
Dock *Rumex sp.*
Gosseberry currant *Ribes montigenum*
Soaptree yucca *Yucca elata*
Pine dropseed *Blepharoneuron tricholepis*
Rubber rabbitbrush *Ericameria nauseosa*
Primrose species *Ludwigia sp*
Horseweed *Erigeron Canadensis*
Ash species *Fraxinus sp.*
Curly-cupped gumweed
Sweet clover
Russian Knapweed

New Flora

Pinyon Pine

Fauna

Acorn woodpecker
Canyon towhee
Pine siskin
Spotted towhee
Western bluebird
Common raven
Pygmy nuthatch
Black-chinned hummingbird
Broad-tailed hummingbird
Domestic dogs
Western tanager
American crow
Rufous hummingbird
Plumbeous vireo
White-breasted nuthatch
Turkey vulture
Lesser goldfinch
Western wood pewee
Mountain chickadee
Cordilleran flycatcher
Bushtit
Mountain cottontail *sylvolagus nuttallii*
American robin
Evening grosbeak
Chipping sparrow
Brown creeper
House wren
Green-tailed towhee

New Fauna

Barn Swallow
Rock pigeon
Mourning dove

APPENDIX B
U.S. Fish and Wildlife Service
Letter of Concurrence

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Mexico Ecological Services Field Office
2105 Osuna Road NE
Albuquerque, New Mexico 87113
Telephone 505-346-2525 Fax 505-346-2542
www.fws.gov/southwest/es/newmexico/

January 17, 2018

Cons. # 02ENNM00-2017-I-1066

Kevin Jaynes
Regional Environmental Officer
Federal Emergency Management Agency Region 6
U.S. Department of Homeland Security
800 North Loop 288
Denton, TX 76209-3698

Dear Mr. Jaynes:

Thank you for your letter dated November 20, 2017, and Biological Assessment (BA) dated November 2017 requesting informal consultation between the Federal Emergency Management Agency (FEMA) and the U.S. Fish and Wildlife Service (Service) pursuant to Section 7 of the Endangered Species Act of 1973 (16U.S.C. § 1531 et seq.), as amended (ESA). We requested additional information and clarifications on December 19, 2017. We received your responses and an updated BA on December 29, 2017, and an additional response on January 4, 2018, which are all hereby incorporated by reference. You have evaluated the impacts from the proposed Los Alamos County Wildfire Mitigation and Public Education Project to the endangered Jemez Mountains salamander (*Plethodon neomexicanus*) and the threatened Mexican spotted owl (*Strix occidentalis lucida*). FEMA requests a concurrence with a determination that the proposed action "may affect, is not likely to adversely affect" the Jemez Mountains salamander and the Mexican spotted owl.

The Los Alamos County Wildfire Mitigation and Public Education Project proposes to implement a wildland fire hazardous fuels mitigation project including planning, assessing, and prioritizing a wildland fire hazardous fuels reduction prescription on forested county lands within the wildland urban interface (WUI) areas of the Los Alamos Community Wildfire Protection Plan (CWPP). The main goal of the project is to reduce the threat of catastrophic wildfire, protect the lives and safety of citizens and firefighters, create defensible space around residential areas and critical facilities, and to promote ecosystem health. Specifically, the mitigation project will thin vegetation on approximately 114 acres (46 hectares) of land managed by Los Alamos

County (County). There are seven treatment areas range in size from 5.8 to 23.2 acres (2.3 to 9.4 hectares) in size. Vegetation thinning will include hand and mechanical thinning of trees and shrubs using chainsaws and pole saws and a wood chipper/mulcher.

Thinning prescription parameters for the proposed action include the following:

- Trees approximately 9 inches (22.5 centimeters) diameter breast height (dbh) or less will be thinned.
- No live piñon trees will be cut.
- No spruce trees will be cut.
- Approximately 50 to 150 trees per acre (124 to 370 trees per hectare) will be retained.
- Treatments will retain 40 to 60 percent canopy cover within each treatment area.
- Individual tree crowns (or in some cases tree groups) will be separated by a distance of approximately 10 to 25 feet (3 to 7.5 meters).
- The crowns from tree groups will be separated by a distance of approximately 40 feet (12 meters) from each other.
- Some trees 12 to 16 inches (30 to 40 centimeters) dbh may be removed to achieve the desired spacing and canopy cover.
- "Ladder" fuels that allow fire to move from the ground into the tree crowns will be removed, while retaining an average of 50 percent coverage throughout treatment area.
- Large logs and snags 15 inches (40 centimeters) in diameter or larger will be retained to the maximum extent practicable to provide habitat for prey species.
- No treatments will be implemented on slopes greater than 25 percent.
- Trees and snags along canyon rims will be retained to the maximum extent possible for wildlife habitat and to provide privacy barriers between residential areas and adjacent public use areas.
- Ponderosa Pine trees less than 8-inch dbh will be cut at full length to be used as water bars on steep slopes to minimize erosion, or used to create water holding ponds for wildlife.
- Invasive species, including understory invasive shrubs up to 6 feet tall, will be removed. Any subsequent treatments to control invasive species will be conducted in coordination with the Open Space Committee and in accordance with the County Noxious Weed Control Plan.

Use of materials will depend on the size and type of material and the site-specific characteristics and objectives of each treatment site. Logs will be limbed and placed on steep slopes to minimize erosion or used by the County Open Space Committee to create holding ponds for wildlife habitat. Usable wood will be stacked near access points for the public to gather and a portion of the usable wood will be blocked-up and donated to local church groups for distribution. Woody shrubs in the understory will be chipped in-place and dispersed evenly

across the treatment area using a wood chipper or mulcher. Some materials may be stacked into slash piles near access points and removed to an off-site location by the Los Alamos County Fire Department.

The following Best Management Practices will also be implemented:

- The accumulation of chipped materials will be limited to an average maximum of 4 inches deep and spread evenly throughout the treatment area. This will allow for grasses and other ground vegetation to grow up through the shredded woody mulch and help retain ground moisture.
- Vehicles and equipment will be cleaned of soil and debris capable of transporting weed seed prior to beginning work in each treatment area to prevent the spread of noxious weeds.
- In compliance with the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act, cutting or removing vegetation, including snags, will occur outside of the migratory bird breeding season (March 1 – August 31). If vegetation removal cannot avoid the bird breeding season, nesting surveys will be completed prior to project implementation to identify any occupied nests and establish avoidance buffers until the young have fledged.

The Jemez Mountains salamander occurs in the vicinity of the project area, approximately 0.28 miles (0.45 km) southeast of the Walnut Bench area of the proposed project. Each unit of the proposed action was evaluated as to whether they contained Jemez Mountains salamander habitat features. You determined that the Walnut Bench unit (18.9 acres; 7.7 hectares) and North Horse Stable Bench unit (23.2 acres; 9.4 hectares) were the areas of the proposed project that contained features most similar to Jemez Mountains salamander habitat.

The following Conservation Measures specifically for Jemez Mountains salamanders will be implemented as part of the proposed action:

- Off road use of wheeled equipment will only occur during times when soils are dry to minimize soil compaction, soil displacement, rutting and erosion, as well as to minimize impacting Jemez Mountains salamander that may occupy the area.
- No treatments will be conducted in the North Horse Stable Bench and Walnut Bench treatment units from June 15 through October 30 to minimize the potential for directly impacting Jemez Mountains salamander that may be in the area.
- Retain Douglas fir (*Pseudotsuga menziesii*) in the North Horse Stable Bench and Walnut Bench treatment units, either standing or as felled logs, to provide habitat for the Jemez Mountains salamander.
- Retain at least 50 percent canopy cover on north facing slopes in the North Horse Stable Bench and Walnut Bench treatment units to promote suitable habitat for (or to minimize impacts to potentially suitable habitat for) the Jemez Mountains salamander.
- Maintain large decaying coniferous logs in the project area to maintain suitable habitat.
- Suitable habitat should be protected where possible from disturbance activities including the use of heavy equipment (compacting soil), or any activity that will desiccate or fragment the habitat.

- To minimize indirect impacts to Jemez Mountains salamanders from soil compaction, off road use of wheeled equipment will be restricted to using one path in and out of each treatment unit.

Mexican spotted owls have been observed in the vicinity of the project area at Los Alamos National Laboratory in the canyons south of, and outside of, the Villa Bench unit. However, these occasional observations are believed to have been foraging individuals and not nesting individuals as no suitable nesting habitat was identified within the project area during the biological survey. The Villa Bench unit is approximately 4.5 miles (7.2 kilometers) southwest of the closest designated critical habitat for Mexican spotted owl. The Villa Bench treatment area is 17.9 acres (7.2 hectares) in size, which is significantly smaller than the Mexican spotted owl's preferred large patch habitat size that ranges in size from 1,728 to 2,688 acres (699 to 1,088 hectares).

The following Conservation Measure specifically for the Mexican spotted owl will be implemented as part of the proposed action:

- If work must take place during Mexican spotted owl breeding and nesting season from March 1 to August 31, nesting surveys must be conducted by a permitted biologist prior to project implementation in order to identify any occupied nests and establish avoidance buffers until the young have fledged.

You have requested that the Service concur with your "may affect, not likely to adversely affect" determinations for the Jemez Mountains salamander and the Mexican spotted owl. Conservation Measures have been put in place to reduce any potential effects of the proposed action to the species to be insignificant and discountable. We concur with your determinations for the following reasons:

Jemez Mountains salamander

- The proposed action does not overlap with any known occupied habitat for the Jemez Mountains salamander.
- The project area overlaps with the lowest elevational extent of potential habitat for the species. Because habitat conditions at the lower extent of the range of the species are generally warmer and drier, it is less likely to be occupied than cooler, wetter habitat locations.
- The Walnut Bench and North Horse Stable Bench units were determined to be the only units with a potential to be salamander habitat that may be occupied by the species. These units total approximately 42 acres (17 hectares). Conservation Measures have been put in place for these two units to directly and indirectly protect the salamander should it be present.
- Seasonal restrictions to working outside of June 15 through October 30 in the Walnut Bench and North Horse Stable Bench units. The seasonal restrictions will eliminate or reduce to a discountable level any potential direct effects to the species, should it be

present in these units, because the species will be underground during this time period (it is only surface active when suitable surface microhabitat conditions exist.)

- Indirect effects will be removed or reduced to an insignificant level by retaining habitat features that are important to the species and include the retention of Douglas fir logs and trees; retention of 50 percent canopy closure; not working on slopes greater than 25 percent; minimizing compaction by working on dry soils and of limited number of passes, and limiting the distribution of chipped materials to 4 inches or less.

Mexican spotted owl

- Data indicate that Mexican spotted owl has used the canyons south of the Villa Bench unit; however, observed owls are believed to be foraging owls with no evidence of nesting.
- The size of the Villa Bench unit is very small compared to the Mexican spotted owl's preferred large patch habitat size, thus making it unlikely that owls would select it for breeding and nesting.
- Work will attempt to avoid Mexican spotted owl breeding and nesting season from March 1 to August 3; however, if work must occur during this time, prior to implementation, nesting surveys will be conducted by a permitted biologist prior to project implementation in order to identify any potential nests.
- If a nest is detected, the Service will be contacted prior to work in the unit.

This concludes informal section 7 consultation with the Service for the proposed Los Alamos County Wildfire Mitigation and Public Education Project. Please contact the Service if: (1) new information reveals effects to the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the action is modified in a manner causing effects to listed species or critical habitat not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.

Thank you for your concern for endangered species and New Mexico's wildlife habitats. If you have any questions, please contact Michelle Christman at the letterhead address, by phone at (505)761-4715, or by electronic mail at michelle_christman@fws.gov.

Sincerely,

Susan S. Millsap
Field Supervisor

cc (electronic):
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division, Santa Fe, New Mexico
Senior Environmental Specialist/Team Lead, Dorothy Cook, FEMA Region 6

APPENDIX C
STATE HISTORIC PRESERVATION OFFICE AND TRIBAL CONSULTATION CORRESPONDENCES

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Jeff Pappas, PhD
State Historic Preservation Officer
Attention Bob Estes, Archaeologist
Department of Cultural Affairs
Bataan Memorial Building
407 Galisteo Street, Suite 236
Santa Fe, New Mexico 87501

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

Dear Dr. Pappas:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for FEMA-DR-4199-NM, Severe Storms and Flooding, dated October 29, 2014. FEMA is initiating Section 106 review for the above referenced properties in accordance with the Programmatic Agreement between FEMA, the New Mexico State Historic Preservation Officer (SHPO), and the New Mexico Department of Homeland Security and Emergency Management (DHSEM) dated May 23, 2016.

It is proposed that federal funding through FEMA's Hazard Mitigation Grant Program be provided to Los Alamos County (Applicant) to conduct fuels reduction on approximately 114 acres of land to include creation of a safety buffer for approximately residential 750 structures and three critical facilities, including two schools and the Los Alamos National Laboratory Pueblo Complex (Undertaking).

The Los Alamos County Fire Department has developed the Los Alamos County Wildfire Mitigation and Public Education Project to reduce the threat of catastrophic wildfire, protect the lives and safety of citizens and firefighters, and create defensible space around residential areas and critical facilities within the Wildland Urban Interface (WUI).

The project entails fuels reduction that would achieved by thinning vegetation by hand on approximately 114 acres within eight high-risk areas of land managed by Los Alamos County: Camino Redondo: 5.8 acres; Camino Uva: 7.2 acres; North Loma Linda: 18.5 acres; North Horse Stable Bench (2 areas): 23.2 acres, Villa Bench: 17.9 acres; Walnut Bench: 18.9 acres; and Ponderosa Estates Range

Road: 22.4 acres. The county would also conduct home assessments on adjacent private lands that are within Home Ignition Zones in Los Alamos County, New Mexico. Vegetation removal using hand saws, chainsaws, and a wood chippers would be used to thin trees and understory shrubs. Use and removal of thinned materials would depend on the size and type of material. In general, logs would be limbed and placed on steep slopes to minimize erosion or used by the County Open Space Committee to create holding ponds for wildlife habitat. Firewood would be stacked near the edge of treatment areas for the public to gather and/or donated to local church groups for distribution. Woody shrubs in the understory would be chipped in-place and dispersed evenly across the treatment area using a wood chipper or mulcher and some materials may be stacked into slash piles near access points or removed to an off-site location by the Los Alamos County Fire Department.

The Applicant contracted qualified professional archaeologists from SWCA Environmental Consultants to conduct an intensive pedestrian cultural resources survey (NMCRIS Activity No. 138852) to identify and record all cultural resources within project area under permit number NM 17-055-S in August of 2017. The Area of Potential Affect (APE) for each fuels reduction project area are included in the attached cultural resources survey report. Six previously recorded cultural resources were identified within the project areas. Per the cultural resources survey report, the pedestrian survey relocated two of these resources (LA 132620 and LA 135430/SR 1827/SR 1849) and recommended that they be considered not eligible due to lack of integrity. Four resources (LA 89103/SR 1827/SR 1848, LA 132621/SR 1827/SR 1850, LA 155822, and LA 155823) were unable to be relocated within the survey area due to the inaccuracy of location information from the original recording or disturbances caused by the modern use of the area and the segments of these resources within the project area were recommended as not eligible. The remainder of the survey areas yielded no new archaeological sites or features. Ten new isolates were recorded during the investigation. No further investigation or resource management was recommended. Please see the survey methodology and findings discussed in the attached report.

Based on the information provided in the cultural resources survey report, FEMA concurs that there are no eligible properties within the APE of the proposed project areas. Therefore, FEMA has determined that there are **No Historic Properties Affected** as a result of the undertaking, under the following conditions.

In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured and access to the sensitive area restricted. If unmarked graves or human remains are present on private or state land, compliance with the New Mexico Cultural Properties Act (Article 18, Section 6, Subsection 11.2 (18-6-11.2), NMSA 1978, also known as the Unmarked Burial Statute is required. NMDHSEM will require the applicant to stop work immediately in the vicinity of the discovery. OEM will immediately notify FEMA, and law enforcement agencies of the discovery, which shall notify the Office of the Medical Investigator (OMI) and the SHPO. OMI shall evaluate the remains for medicolegal significance with minimal disturbance of the remains. OMI will terminate the discovery of any non-medicolegal human remains to the SHPO, who shall proceed pursuant to the Unmarked Burial Statute and its implementing regulations found at 4.10.11 NMAC. For any questions for human remains on state or private land, contact State Archeologist, Bob Estes, (505) 827-4225, Fax (505) 827-6338, bob.estes@state.nm.us .

We respectfully request concurrence with this determination. A copy of the cultural resources survey report, including location maps, APE maps of the survey areas, NMCRIS ARMS cultural resource maps, photos, and updated site records are attached. As of October 20, 2017, the survey report, NMCRIS Investigation Abstract Form (NIAF), and updated site records have been uploaded to NMCRIS. Your prompt review of this project is greatly appreciated. Should you need additional information please contact James A. Leamy III, Historic Preservation Specialist at james.leamyiii@fema.dhs.gov or (940) 297-0207.

Sincerely,

DOROTHY K WEIR COOK

Digitally signed by DOROTHY K WEIR COOK
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=DOROTHY K WEIR COOK, 0.9.2342.19200300.100.1.1=0694625897.FEMA.1
Date: 2017.10.24 15:05:12 -05'00'

DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

STATE OF NEW MEXICO
DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

Susana Martinez
Governor

BATAAN MEMORIAL BUILDING
407 GALISTEO STREET, SUITE 236
SANTA FE, NEW MEXICO 87501
PHONE (505) 827-6320 FAX (505) 827-6338

November 16, 2017

James Leamy
Historic Preservation Specialist
FEMA Region VI 800 N Loop 288
Denton, Texas 76209

RE: FEMA-4199-DR-NM-HMGP # 17 (HPD log 106666)

Dear Mr. Leamy,

On behalf of the New Mexico State Historic Preservation Officer (SHPO) I want to thank you for providing the aforementioned report for review and comment. I have completed the review and this letter provides SHPO comments on the determinations of eligibility for listing in the National Register of Historic Places (NRHP) , and the assessment of effect.

The consultation letter indicates that LA 89103/ (SR) 2837/SR 1848 was not relocated, and the consultant recommended the site not eligible for the NRHP. The SHPO does not concur that the site is not eligible for the NRHP because it is listed in the State Register of Cultural Properties (SR), may be relocated at some point in the future, and re-evaluated.

The SHPO does not concur with the determinations that LA 135430/SR 1827/SR 1849 is not eligible for the NRHP. The historic property is listed on the State Register of Cultural Properties, and may be eligible for the NRHP at some time in the future.

The SHPO does not concur that LA 132620 is not eligible for the NRHP for the following reason. Rock shelters and cavates in the area of Los Alamos are special property type that may be eligible for the NRHP under Criteria A, for broad patterns in history, under Criterion C for their architectural characteristics, and may be a contributing element of an unidentified historic district. It is SHPOs' opinion that LA 132620's eligibility for the NRHP remains undetermined until more information about the property can be provided.

The SHPO does not concur with the determinations that LA 132621/SR 1827/SR 1850 is not eligible for the NRHP. The historic property is listed on the State Register of Cultural Properties, may be relocated and re-evaluated, and at some point in the future may be eligible for the NRHP at some time in the future.

The consultation letter indicates that LA 155822 was not relocated, and the consultant recommended the site not eligible for the NRHP. The SHPO does not concur that the site is not eligible for the NRHP pending more information about the site and updated or corrected locational information.

The consultation letter indicates that LA 155823 was not relocated, and the consultant recommended the site not eligible for the NRHP. The SHPO does not concur that the site is not eligible for the NRHP pending more information about the site and updated or corrected locational information.

Although SHPO does not concur with the determinations of eligibility for the aforementioned sites, it is our opinion that the project will have no adverse effect to historic properties given the work methods described in the letter and the discovery clause included with the consultation.

If you have question or comments, please feel free to call me directly at (505) 827-4225 or email me at bob.estes@state.nm.us.

Sincerely,

Bob Estes

Bob Estes Ph.D.
HPD Staff Archaeologist

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Martina Callahan, THPO
Comanche Nation
6 SW D. Ave, Suite C
Lawton, OK 73507

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

Dear Ms. Callahan:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for FEMA-DR-4199-NM, Severe Storms and Flooding, dated October 29, 2014. FEMA is initiating Section 106 review for the above referenced properties based on the Tribes ancestral interest in the project area.

It is proposed that federal funding through FEMA's Hazard Mitigation Grant Program be provided to Los Alamos County (Applicant) to conduct fuels reduction on approximately 114 acres of land to include creation of a safety buffer for approximately residential 750 structures and three critical facilities, including two schools and the Los Alamos National Laboratory Pueblo Complex (Undertaking).

The Los Alamos County Fire Department has developed the Los Alamos County Wildfire Mitigation and Public Education Project to reduce the threat of catastrophic wildfire, protect the lives and safety of citizens and firefighters, and create defensible space around residential areas and critical facilities within the Wildland Urban Interface (WUI).

The project entails fuels reduction that would achieved by thinning vegetation by hand on approximately 114 acres within eight high-risk areas of land managed by Los Alamos County: Camino Redondo: 5.8 acres; Camino Uva: 7.2 acres; North Loma Linda: 18.5 acres; North Horse Stable Bench (2 areas): 23.2 acres, Villa Bench: 17.9 acres; Walnut Bench: 18.9 acres; and Ponderosa Estates Range Road: 22.4 acres. The county would also conduct home assessments on adjacent private lands that are within Home Ignition Zones in Los Alamos County, New Mexico. Vegetation removal using hand saws, chainsaws, and a wood chippers would be used to thin trees and understory shrubs. Use and removal of thinned materials would depend on the size and type of material. In general, logs would be limbed and placed on steep slopes to minimize erosion or used by

the County Open Space Committee to create holding ponds for wildlife habitat. Firewood would be stacked near the edge of treatment areas for the public to gather and/or donated to local church groups for distribution. Woody shrubs in the understory would be chipped in-place and dispersed evenly across the treatment area using a wood chipper or mulcher and some materials may be stacked into slash piles near access points or removed to an off-site location by the Los Alamos County Fire Department.

The Applicant contracted qualified professional archaeologists from SWCA Environmental Consultants to conduct an intensive pedestrian cultural resources survey (NMCRIS Activity No. 138852) to identify and record all cultural resources within project area under permit number NM 17-055-S in August of 2017. The Area of Potential Affect (APE) for each fuels reduction project area are included in the attached cultural resources survey report. Six previously recorded cultural resources were identified within the project areas. Per the cultural resources survey report, the pedestrian survey relocated two of these resources (LA 132620 and LA 135430/SR 1827/SR 1849) and recommended that they be considered not eligible due to lack of integrity. Four resources (LA 89103/SR 1827/SR 1848, LA 132621/SR 1827/SR 1850, LA 155822, and LA 155823) were unable to be relocated within the survey area due to the inaccuracy of location information from the original recording or disturbances caused by the modern use of the area and the segments of these resources within the project area were recommended as not eligible. The remainder of the survey areas yielded no new archaeological sites or features. Ten new isolates were recorded during the investigation. No further investigation or resource management was recommended. Please see the survey methodology and findings discussed in the attached report.

Based on the information provided in the cultural resources survey report, FEMA concurs that there are no eligible properties within the APE of the proposed project areas. Therefore, FEMA has determined that there are **No Historic Properties Affected** as a result of the undertaking, under the following conditions.

We respectfully request concurrence with this determination. A copy of the cultural resources survey report, including location maps, APE maps of the survey areas, NMCRIS ARMS cultural resource maps, photos, and updated site records are attached. As of October 20, 2017, the survey report, NMCRIS Investigation Abstract Form (NIAF), and updated site records have been uploaded to NMCRIS. Your prompt review of this project is greatly appreciated. Should you need additional information please contact James A. Leamy III, Historic Preservation Specialist at james.leamyiii@fema.dhs.gov or (940) 297-0207.

Sincerely,

DOROTHY K WEIR COOK

Digitally signed by DOROTHY K WEIR COOK
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=DOROTHY K WEIR COOK, 0.9.2342.19200300.100.1.1=0694625897.FEMA.1
Date: 2017.10.24 15:06:44 -05'00'

DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

COMANCHE NATION

Federal Emergency Management Agency Region 6
Attn: Mr. James A. Leamy III
800 N. Loop 288
Texas 76209

October 25, 2017

Re: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326-106.30202)
UTM – 13S 382490m E3972892m N

Dear Mr. Leamy :

In response to your request, the above reference project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of ***"No Properties"*** have been identified. (IAW 36 CFR 800.4(d)(1)).

Please contact this office at (580) 595-9960/9618) if you require additional information on this project.

This review is performed in order to identify and preserve the Comanche Nation and State cultural heritage, in conjunction with the State Historic Preservation Office.

Regards

Comanche Nation Historic Preservation Office
Theodore E. Villicana ,Technician
#6 SW "D" Avenue , Suite C
Lawton, OK. 73502

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Richard M. Begay, THPO
Navajo Nation
P.O. Box 4950
Window Rock, AZ 86515

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

Dear Mr. Begay:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for FEMA-DR-4199-NM, Severe Storms and Flooding, dated October 29, 2014. FEMA is initiating Section 106 review for the above referenced properties based on the Tribes ancestral interest in the project area.

It is proposed that federal funding through FEMA's Hazard Mitigation Grant Program be provided to Los Alamos County (Applicant) to conduct fuels reduction on approximately 114 acres of land to include creation of a safety buffer for approximately residential 750 structures and three critical facilities, including two schools and the Los Alamos National Laboratory Pueblo Complex (Undertaking).

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The project entails fuels reduction that would achieved by thinning vegetation by hand on approximately 114 acres within eight high-risk areas of land managed by Los Alamos County: Camino Redondo: 5.8 acres; Camino Uva: 7.2 acres; North Loma Linda: 18.5 acres; North Horse Stable Bench (2 areas): 23.2 acres, Villa Bench: 17.9 acres; Walnut Bench: 18.9 acres; and Ponderosa Estates Range Road: 22.4 acres. The county would also conduct home assessments on adjacent private lands that are within Home Ignition Zones in Los Alamos County, New Mexico. Vegetation removal using hand saws, chainsaws, and a wood chippers would be used to thin trees and understory shrubs. Use and removal of thinned materials would depend on the size and type of material. In general, logs would be limbed and placed on steep slopes to minimize erosion or used by

the County Open Space Committee to create holding ponds for wildlife habitat. Firewood would be stacked near the edge of treatment areas for the public to gather and/or donated to local church groups for distribution. Woody shrubs in the understory would be chipped in-place and dispersed evenly across the treatment area using a wood chipper or mulcher and some materials may be stacked into slash piles near access points or removed to an off-site location by the Los Alamos County Fire Department.

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We respectfully request concurrence with this determination. A copy of the cultural resources survey report, including location maps, APE maps of the survey areas, NMCRIS ARMS cultural resource maps, photos, and updated site records are attached. As of October 20, 2017, the survey report, NMCRIS Investigation Abstract Form (NIAF), and updated site records have been uploaded to NMCRIS. Your prompt review of this project is greatly appreciated. Should you need additional information please contact James A. Leamy III, Historic Preservation Specialist at james.leamyiii@fema.dhs.gov or (940) 297-0207.

Sincerely,

DOROTHY K WEIR COOK

Digitally signed by DOROTHY K WEIR COOK
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=DOROTHY K WEIR COOK, 0.9.2342.19200300.100.1.1=0694625897.FEMA.1
Date: 2017.10.24 15:06:44 -05'00'

DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

From: Melinda Arviso-Ciocco
To: Leamy iii, James
Subject: HMGP Project #17, Wildfire Mitigation adn Public Education Project
Date: Monday, November 20, 2017 4:50:26 PM

Good Afternoon,

After review of the documents provided on the fuels reduction on approximately 114 acres of land to include creation of a safety buffer for approximately residential 750 structures and three critical facilities, within the Las Alamos County, New Mexico, Navajo Nation has no concerns with the project proposed initiative.

If you have any questions please feel free to contact our office at 928-871-7198. Thank you for consulting with the Navajo Nation.

Melinda Arviso-Ciocco
Traditional Culture Program
Navajo Nation Heritage & Historic Preservation Department
P.O. Box 4950
Window Rock, AZ 86515
(O)928-871-7198 ext. 7153
(E)maciocco@navajo-nsn.gov

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Governor Eugene Herrera
Pueblo of Cochiti
P.O. Box 70
Cochiti, NM 87072

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

Dear Governor Herrera:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for FEMA-DR-4199-NM, Severe Storms and Flooding, dated October 29, 2014. FEMA is initiating Section 106 review for the above referenced properties based on the Tribes ancestral interest in the project area.

It is proposed that federal funding through FEMA's Hazard Mitigation Grant Program be provided to Los Alamos County (Applicant) to conduct fuels reduction on approximately 114 acres of land to include creation of a safety buffer for approximately residential 750 structures and three critical facilities, including two schools and the Los Alamos National Laboratory Pueblo Complex (Undertaking).

The Los Alamos County Fire Department has developed the Los Alamos County Wildfire Mitigation and Public Education Project to reduce the threat of catastrophic wildfire, protect the lives and safety of citizens and firefighters, and create defensible space around residential areas and critical facilities within the Wildland Urban Interface (WUI).

The project entails fuels reduction that would achieved by thinning vegetation by hand on approximately 114 acres within eight high-risk areas of land managed by Los Alamos County: Camino Redondo: 5.8 acres; Camino Uva: 7.2 acres; North Loma Linda: 18.5 acres; North Horse Stable Bench (2 areas): 23.2 acres, Villa Bench: 17.9 acres; Walnut Bench: 18.9 acres; and Ponderosa Estates Range Road: 22.4 acres. The county would also conduct home assessments on adjacent private lands that are within Home Ignition Zones in Los Alamos County, New Mexico. Vegetation removal using hand saws, chainsaws, and a wood chippers would be used to thin trees and understory shrubs. Use and removal of thinned materials would depend on the size and type of material. In general, logs would be limbed and placed on steep slopes to minimize erosion or used by

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DOROTHY K WEIR COOK

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Date: 2017.10.24 15:06:44 -05'00'

DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Mr. Leigh Kuwanwisiwama, Director
Hopi Tribe, Cultural Preservation Office
PO Box 123
Kykotsmovi, AZ 86039

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

Dear Mr. Kuwanwisiwama:

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DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Mr. Christopher Toya, THPO
Pueblo of Jemez
P.O. Box 100
Jemez Pueblo, NM 87024

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

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Date: 2017.10.24 15:06:44 -05'00'

DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Mr. John Cruz
Cultural Preservation/Environmental Manager
P.O. Box 717
Ohkay Owingeh, NM 87566

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

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DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Bradley Vierra, THPO
Pueblo of San Ildefonso
02 Tunyo Po
Santa Fe, NM 87506

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

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DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Mr. Ben Chavarria, THPO
Pueblo of Santa Clara
P.O. Box 580
Española, NM 87532

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

Dear Mr. Chavarria:

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The project entails fuels reduction that would achieved by thinning vegetation by hand on approximately 114 acres within eight high-risk areas of land managed by Los Alamos County: Camino Redondo: 5.8 acres; Camino Uva: 7.2 acres; North Loma Linda: 18.5 acres; North Horse Stable Bench (2 areas): 23.2 acres, Villa Bench: 17.9 acres; Walnut Bench: 18.9 acres; and Ponderosa Estates Range Road: 22.4 acres. The county would also conduct home assessments on adjacent private lands that are within Home Ignition Zones in Los Alamos County, New Mexico. Vegetation removal using hand saws, chainsaws, and a wood chippers would be used to thin trees and understory shrubs. Use and removal of thinned materials would depend on the size and type of material. In general, logs would be limbed and placed on steep slopes to minimize erosion or used by

the County Open Space Committee to create holding ponds for wildlife habitat. Firewood would be stacked near the edge of treatment areas for the public to gather and/or donated to local church groups for distribution. Woody shrubs in the understory would be chipped in-place and dispersed evenly across the treatment area using a wood chipper or mulcher and some materials may be stacked into slash piles near access points or removed to an off-site location by the Los Alamos County Fire Department.

The Applicant contracted qualified professional archaeologists from SWCA Environmental Consultants to conduct an intensive pedestrian cultural resources survey (NMCRIS Activity No. 138852) to identify and record all cultural resources within project area under permit number NM 17-055-S in August of 2017. The Area of Potential Affect (APE) for each fuels reduction project area are included in the attached cultural resources survey report. Six previously recorded cultural resources were identified within the project areas. Per the cultural resources survey report, the pedestrian survey relocated two of these resources (LA 132620 and LA 135430/SR 1827/SR 1849) and recommended that they be considered not eligible due to lack of integrity. Four resources (LA 89103/SR 1827/SR 1848, LA 132621/SR 1827/SR 1850, LA 155822, and LA 155823) were unable to be relocated within the survey area due to the inaccuracy of location information from the original recording or disturbances caused by the modern use of the area and the segments of these resources within the project area were recommended as not eligible. The remainder of the survey areas yielded no new archaeological sites or features. Ten new isolates were recorded during the investigation. No further investigation or resource management was recommended. Please see the survey methodology and findings discussed in the attached report.

Based on the information provided in the cultural resources survey report, FEMA concurs that there are no eligible properties within the APE of the proposed project areas. Therefore, FEMA has determined that there are **No Historic Properties Affected** as a result of the undertaking, under the following conditions.

We respectfully request concurrence with this determination. A copy of the cultural resources survey report, including location maps, APE maps of the survey areas, NMCRIS ARMS cultural resource maps, photos, and updated site records are attached. As of October 20, 2017, the survey report, NMCRIS Investigation Abstract Form (NIAF), and updated site records have been uploaded to NMCRIS. Your prompt review of this project is greatly appreciated. Should you need additional information please contact James A. Leamy III, Historic Preservation Specialist at james.leamyiii@fema.dhs.gov or (940) 297-0207.

Sincerely,

DOROTHY K WEIR COOK

Digitally signed by DOROTHY K WEIR COOK
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=DOROTHY K WEIR COOK, 0.9.2342.19200300.100.1.1=0694625897.FEMA.1
Date: 2017.10.24 15:06:44 -05'00'

DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

October 24, 2017

Mr. Charles Dorame, THPO
Pueblo of Tesuque
Route 42, Box 360-T
Santa Fe, NM 87506

RE: Section 106 Review Consultation, FEMA-4199-DR-NM
HMGP Project #17, Wildfire Mitigation and Public Education Project
Los Alamos County, New Mexico
(35.89326 -106.30202)
UTM- 13S 382490m E 3972892m N

Dear Mr. Dorame:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for FEMA-DR-4199-NM, Severe Storms and Flooding, dated October 29, 2014. FEMA is initiating Section 106 review for the above referenced properties based on the Tribes ancestral interest in the project area.

It is proposed that federal funding through FEMA's Hazard Mitigation Grant Program be provided to Los Alamos County (Applicant) to conduct fuels reduction on approximately 114 acres of land to include creation of a safety buffer for approximately residential 750 structures and three critical facilities, including two schools and the Los Alamos National Laboratory Pueblo Complex (Undertaking).

The Los Alamos County Fire Department has developed the Los Alamos County Wildfire Mitigation and Public Education Project to reduce the threat of catastrophic wildfire, protect the lives and safety of citizens and firefighters, and create defensible space around residential areas and critical facilities within the Wildland Urban Interface (WUI).

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the County Open Space Committee to create holding ponds for wildlife habitat. Firewood would be stacked near the edge of treatment areas for the public to gather and/or donated to local church groups for distribution. Woody shrubs in the understory would be chipped in-place and dispersed evenly across the treatment area using a wood chipper or mulcher and some materials may be stacked into slash piles near access points or removed to an off-site location by the Los Alamos County Fire Department.

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Based on the information provided in the cultural resources survey report, FEMA concurs that there are no eligible properties within the APE of the proposed project areas. Therefore, FEMA has determined that there are **No Historic Properties Affected** as a result of the undertaking, under the following conditions.

We respectfully request concurrence with this determination. A copy of the cultural resources survey report, including location maps, APE maps of the survey areas, NMCRIS ARMS cultural resource maps, photos, and updated site records are attached. As of October 20, 2017, the survey report, NMCRIS Investigation Abstract Form (NIAF), and updated site records have been uploaded to NMCRIS. Your prompt review of this project is greatly appreciated. Should you need additional information please contact James A. Leamy III, Historic Preservation Specialist at james.leamyiii@fema.dhs.gov or (940) 297-0207.

Sincerely,

DOROTHY K WEIR COOK

Digitally signed by DOROTHY K WEIR COOK
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=DOROTHY K WEIR COOK, 0.9.2342.19200300.100.1.1=0694625897.FEMA.1
Date: 2017.10.24 15:06:44 -05'00'

DWC for Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

APPENDIX D
Public Scoping Notices

PUBLIC SERVICE ANNOUNCEMENT

For Immediate Release: **SEPTEMBER 11, 2017** ***LOS ALAMOS, NM***

Los Alamos County Fire Department

Los Alamos County Fire Department in coordination with the Federal Emergency Management Agency (FEMA) is requesting public input on a proposed Wildfire Mitigation Project in Los Alamos County, New Mexico. The County Fire Department will host a public meeting on September 20, 2017 to provide details about the project and to solicit input from the public. The public meeting will be held from 5:30 to 7:30 PM at the Los Alamos Fire Department Administration Building in the Training Room, located at 999 Central Avenue in Los Alamos.

The proposed Wildfire Mitigation Project would include vegetation thinning on approximately 114 acres of County open space lands and home assessments on adjacent private lands to minimize fire hazard risk throughout the County and to protect the health and sustainability of the County's natural resources and open space values. The vegetation thinning component of the Project would include thinning trees and understory shrubs using chainsaws, pole saws and a wood chipper on County lands located north of the Horse Stables, as well as County Lands in Ponderosa Estates, the Del Norte and Del Sol subdivisions, and on County lands behind Walnut, Villa, and Loma Linda Streets. The proposed project would be completed with funding awarded to the County through FEMA's Hazard Mitigation Grant Program. All vegetation thinning would be conducted on County Open Space lands and implemented by the Wildland Division of the Los Alamos County Fire Department.

More information about this project, including a map of the proposed treatment areas, is available online at www.LACwildfireproject.us or by contacting the Project Manager, Chief Kelly Sterna at 505-662-8301 or by email at kelly.sterna@lacnm.us. Written comments regarding the proposed Project, can be submitted at the public meeting on September 20th or submitted electronically at the above listed web address, or mailed to LAC Wildfire Mitigation Project, c/o SWCA Environmental Consultants, 130 Rock Point Dr. Ste. A, Durango, CO 81301. Written comments should be submitted no later than September 27th in order to be considered in the Environmental Assessment.

September 15, 2017

Dear Interested Party:

The Los Alamos County Fire Department in coordination with the Federal Emergency Management Agency (FEMA) is requesting public input on a proposed **Wildfire Mitigation Project** in Los Alamos County, New Mexico. A public meeting will be held on ***September 20, 2017*** to provide details about the project. The meeting will be held ***from 5:30 to 7:30 PM at the Los Alamos Fire Department Administration Building*** in the 3rd floor Training Room, located at 999 Central Avenue in Los Alamos.

The proposed Wildfire Mitigation Project would include vegetation thinning on approximately 114 acres of County open space lands and home assessments on adjacent private lands to minimize fire hazard risk throughout the County and to protect the health and sustainability of the County's natural resources and open space values. The vegetation thinning component of the Project would include thinning trees and understory shrubs using chainsaws, pole saws and a wood chipper on County lands located north of the Horse Stables, as well as on County Lands in Ponderosa Estates, the Del Norte and Del Sol subdivisions, and on County lands behind Walnut, Villa, and Loma Linda Streets (see enclosed map). All of the vegetation thinning locations are within the designated Wildland Urban Interface (WUI) and were identified as priority treatment areas in the recently revised County Wildfire Protection Plan. Vegetation thinning in these areas would directly benefit two nearby schools, the Los Alamos National Laboratory, and approximately 750 residential structures that are interspersed with County open space lands.

Additionally, the Proposed Action would also include a public education component. The education outreach would include conducing home assessments on private property in the Home Ignition Zone adjacent to County lands and dissemination of FireWise information. Additionally, educational component would coordinate vegetation removal from private lands with Wildfire Awareness Day activities in April and the County sponsored clean-up day in May. All of these events are aimed at creating an informed citizenry and establishing defense zones between population areas and the natural areas within the county.

The proposed project would be completed with funding awarded to the County through FEMA's Hazard Mitigation Grant Program and would be implemented by the Wildland Division of the Los Alamos County Fire Department. More information about this project is available online at www.LACwildfireproject.us or by contacting the Project Manager, Chief Kelly Sterna at 505-662-8301.

Written comments regarding the proposed Project, can be submitted at the public meeting on September 20th, or submitted electronically to LACmitigationproject@swca.com , or mailed to LAC Wildfire Mitigation Project, c/o SWCA Environmental Consultants, 130 Rock Point Dr. Ste. A, Durango, CO 81301, or faxed to 970-385-1938. Written comments should be submitted no later than September 27th in order to be considered in the Environmental Assessment.

We hope to see you at the public meeting on the 20th!

Sincerely,

Los Alamos County Fire Department

Wildfire Mitigation Project Public Meeting Sept. 20

Submitted by Carol A. Clark
on September 12, 2017 - 9:23am

FEMA News:

Los Alamos County Fire Department in coordination with the Federal Emergency Management Agency (FEMA) is requesting public input on a proposed Wildfire Mitigation Project in Los Alamos County, New Mexico.

The County will host a public meeting Sept. 20, to provide details about the project and to solicit input from the public. The public meeting is 5:30-7:30 p.m. at the Los Alamos Fire Department Administration Building in the Training Room, at 999 Central Ave. in Los Alamos.

The proposed Wildfire Mitigation Project would include vegetation thinning on approximately 114 acres of County open space lands and home assessment on adjacent private lands to minimize fire hazard risk throughout the County and to protect the health and sustainability of the County's natural resources and open space values.

The vegetation thinning component of the Project would include thinning trees and understory shrubs using chainsaws, pole saws and a wood chipper on County lands located north of the Horse Stables, as well as County Lands in Ponderosa Estates, the Del Norte and Del Sol subdivisions, and on County lands behind Walnut, Villa, and Loma Linda Streets. The proposed project would be completed with funding awarded to the County through FEMA's Hazard Mitigation Grant Program. All vegetation thinning would be conducted on County Open Space lands and implemented by the Wildland Division of the Los Alamos County Fire Department.

More information about this project, including a map of the proposed treatment areas, is available online at www.LACwildfireproject.us or by contacting the Project Manager, Chief Kelly Sterna at 505.662.8301 or by email at kelly.sterna@lacnm.us.

Written comments regarding the proposed Project, can be submitted at the public meeting on Sept. 20 or submitted electronically at the above listed web address, or mailed to LAC Wildfire Mitigation Project, c/o SWCA Environmental Consultants, 130 Rock Point Dr. Ste. A, Durango, CO 81301. Written comments should be submitted no later than Sept. 27 in order to be considered in the Environmental Assessment.

LAFD starts study of Wildfire Mitigation, Education project

By Wren Propp
Friday, September 22, 2017 at 10:39 am

http://www.lamonitor.com/content/lafd-starts-study-wildfire-mitigation-education-project

About 114 acres of forested “benches” and shrubby swaths within Los Alamos County are the target of a new wildfire mitigation project in the early stages of discussion.

<image001.jpg>
Los Alamos County/Courtesy
The project area is depicted in this map.

About 10 members of the public attended the preliminary discussion on Wednesday with Los Alamos Fire Department officials, including newly appointed Wildland Division Chief Kelly Sterna, and a representative of SWCA, an environmental consultants firm based in Durango, Colorado.

Seven areas within Los Alamos proper have been identified as prime spots to clear brush and dead trees, along with some still-living trees, to prevent or slow down the next big wildfire that may head toward Los Alamos.

“If you think about it, there was the Cerro Grande in 2001, the Las Conchas in 2011. So, you wonder, what’s going to happen in 2021?” Sterna told the group.

Sterna and retiring Wildland Division Chief Ramon Garcia both said mitigation in wind-driven “chimneys” within the wooded urban areas of the county plays a large role in preventing another conflagration.

The department has a $400,000 grant from the Federal Emergency Management Agency, including $52,000 for developing an environmental assessment of fire hazards within the county. Three years remain to spend the large grant, although comments at the meeting from the public hinted that more funds are needed.
Current mitigation projects are ongoing, including work near Canyon Rim Trail in Los Alamos and east of Rover in White Rock.

Under discussion at Wednesday’s meeting were county-owned areas identified as: the Villa Bench; the Walnut Bench; Ponderosa Estates Range Road; North Loma Linda, Camino Redondo; the North Horse Stable Bench; and the Camino Uva Project.

The proposal also includes public education to help homeowners find ways to create defensible space.

Los Alamos resident Larry Tickner said past mitigation projects were failing because only old trees were left – future generations of trees were cut down. Many of the old trees are dying with no new "baby" trees left to take their place, he said.

"That needs to be re-looked at," he said.
More care would be taken to keep young and old trees alive if the mitigation proposal comes to fruition, Garcia said. For example, developing water-holding places for the trees could be considered.

Comments on the preliminary idea should be submitted to SWCA no later than Wednesday. A much longer, 30-day comment period is planned following development of a draft.

Wildfire awareness activities are planned throughout October, including opportunities for homeowners to visit with firefighters about creating defensible spaces.

Also, the county's Community Wildfire Protection Plan is scheduled for its twice-yearly review and updates in November. Comments should be submitted to LACproject@swca.com, or faxed to 970-385-1938. By regular mail to LAC Wildfire Mitigation Project, c/o SWCA Environmental Consultants, 130 Rock Point Drive, Ste. A, Durango, CO 81301. More information is available at LACwildfireproject.us.

APPENDIX E

Public Scoping Meeting Materials and Participants

Los Alamos County

Wildfire Mitigation and Public Education Project

Public Meeting

September 20, 2017 ◊ 5:30 – 7:30 PM

AGENDA

Meeting Purpose: To provide an opportunity for the public:

- ✓ to learn about the Project and the environmental analysis process;
- ✓ to identify issues of concern for analysis; and
- ✓ to give suggestions for improving the Project design and implementation.

1. **Welcome, Introductions and Meeting Overview – 5 min.**

2. **Presentation – 40 min.**
   - Overview of the Los Alamos Wildfire Mitigation and Public Education Project
     - What is it? Why is it needed? Where, When and How?
   - Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program
   - National Environmental Policy Act (NEPA)
     - Public Involvement: Scoping and 30-day Public Review and Comment Period
     - Environmental Assessment (EA): Analysis of Impacts and updating old County analysis

3. **Related opportunities and Community Outreach Events – 10 min.**
   - Fire Prevention Month -- October 8-14
     - Opportunity to visit homes that have created defensible space to mitigate wildfire hazard
   - Community Wildfire Protection Plan: Bi-annual review and updates Meeting in November
   - Wildfire Awareness Day in April
   - County clean-up day in May

4. **Submit written comments on the Project – 10 min.**

   Tonight: Comment forms available
   Electronically: LACproject@swca.com - *in the body of the email or as a word or pdf attachment);* or
   Fax: 970-385-1938; or
   Mailed to: LAC Wildfire Mitigation Project
   c/o SWCA Environmental Consultants
   130 Rock Point Dr., Ste. A
   Durango, CO 81301

   Please submit comments by September 27, 2017

5. **Questions, Answers and Discussion – 20 min.**

6. **Thank you & wrap up – 5 min.**

Stay Informed!

Updates on Webpage: **www.LACwildfireproject.us**
For more information: Chief Kelly Sterna, Project Manager
505-662-8301 or Kelly.sterna@lacnm.us

Los Alamos Fire Department

Los Alamos County Wildfire Mitigation and Public Education Project Comment Form

Input may be submitted tonight using this form; or submitted electronically at LACproject@swca.com; or mailed to LAC Wildfire Mitigation Project, c/o SWCA Environmental Consultants, 130 Rock Point Dr. Ste. A, Durango, CO 81301; or by fax 970-385-1938. Please submit comments by September 29, 2017.

Note: *Individuals requesting that their name and home address be withheld from public review or from disclosure under the Freedom of Information Act must check "YES" in the column under "Name and Address." Such requests will be honored to the extent allowed by law.*

Name and Address	
	Do you wish to have your personal information withheld? YES ❑ NO ❑

Please provide written comments below.

Los Alamos County Wildfire Mitigation Project
Meeting Sign in Sheet

Name	Affiliation	Email or Mailing Address
Georgia Struckfaden	LA Stables, Lot 47+111 Atomic City Tours, LLC	buffalotours@att.net
** Melissa Arias	Stables - Lots 124/125	m3arias@gmail.com
Stephanie Nakhleh	Parks & Rec Board	sylvan-nak@gmail.com
Jill Bede	Stable Owner	—
Lawrence Tickner	Homeowner	lotickner@gmail.com
Chris Wilson	Los Alamos County CSD/PROS	christopher.wilson@lacnm.us
Dianne Wilburn	Stable Owner	ZLATEHSKINDER@GMAIL.COM

Meeting Date: Sept. 20, 2017

Meeting Location: 999 Central Ave Suite 300/ LAFD Training Rm

Los Alamos County Wildfire Mitigation Project
Meeting Sign in Sheet

Name	Affiliation	Email or Mailing Address
Wren Propp - Reporter	LA Monitor	wpropp@lamonitor.com
Pete Sheehey	LA City Council	pete.sheehey@lacnm.us

Meeting Date: Sept. 20, 2017

Meeting Location: 999 Central Ave Suite 300/ LAFD Training Rm

Wildfire Mitigation and Public Education Project

Los Alamos County, New Mexico

Wildfire Mitigation and Public Education Project

Project Components

- Vegetation Thinning on 114 acres of County lands in the Wildland Urban Interface (WUI)
- Public Education: Home Assessments and Community Outreach Events

Purpose and Need for Project: Wildfire Hazard Mitigation

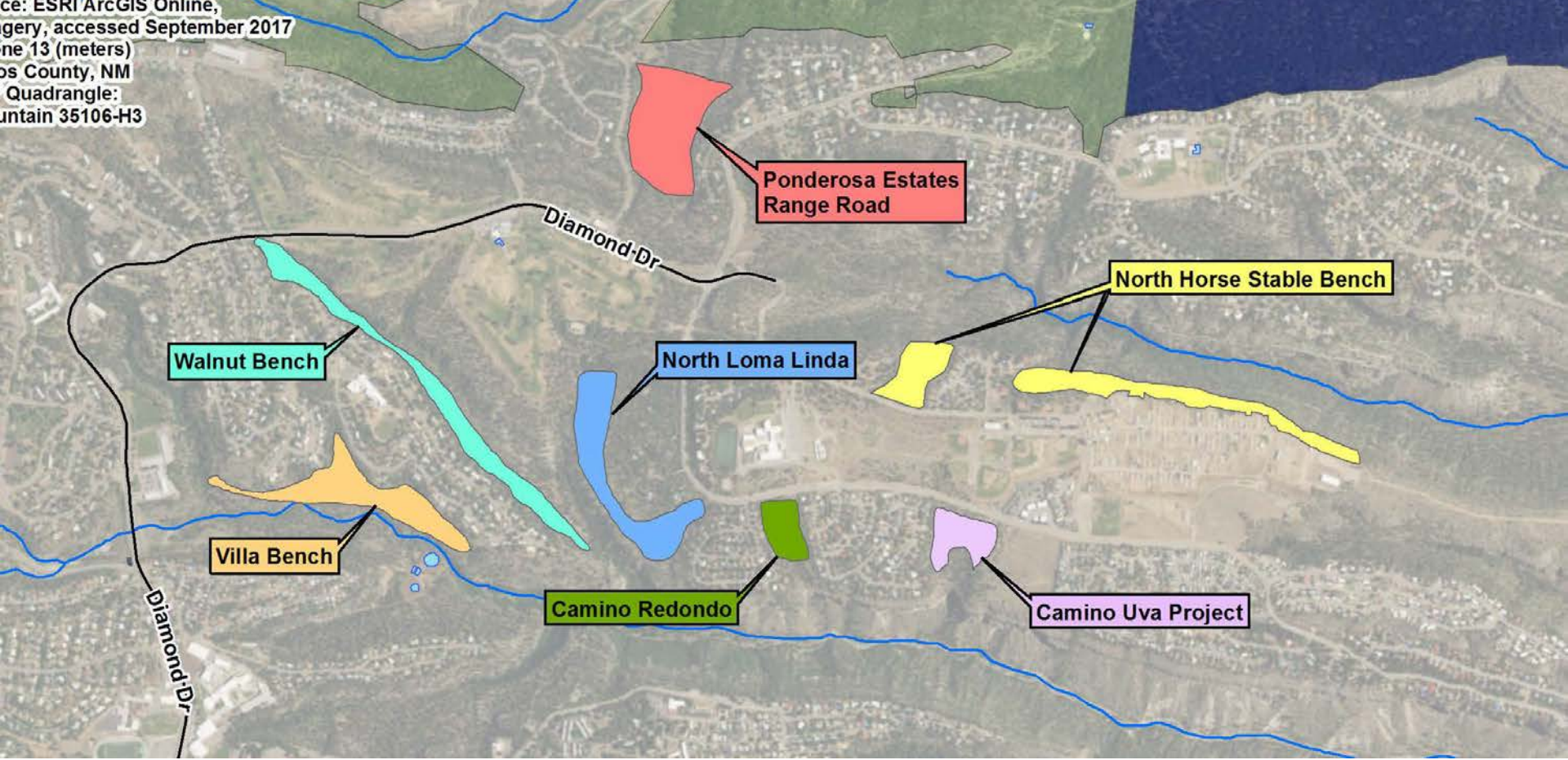
- ✓ Reduce risk of severe wildfire;
- ✓ Protect the lives and safety of citizens and firefighters;
- ✓ Create defensible space around residential areas and critical facilities; and
- ✓ Promote ecosystem health

Vegetation Thinning Areas

Seven Areas—*All on County lands*

- Walnut Bench
- Villa Bench
- North Loma Linda
- Ponderosa Estates
- North Horse Stable Bench
- Camino Redondo
- Camino Uva

- Thinning trees and understory shrubs
- 114 Acres Combined

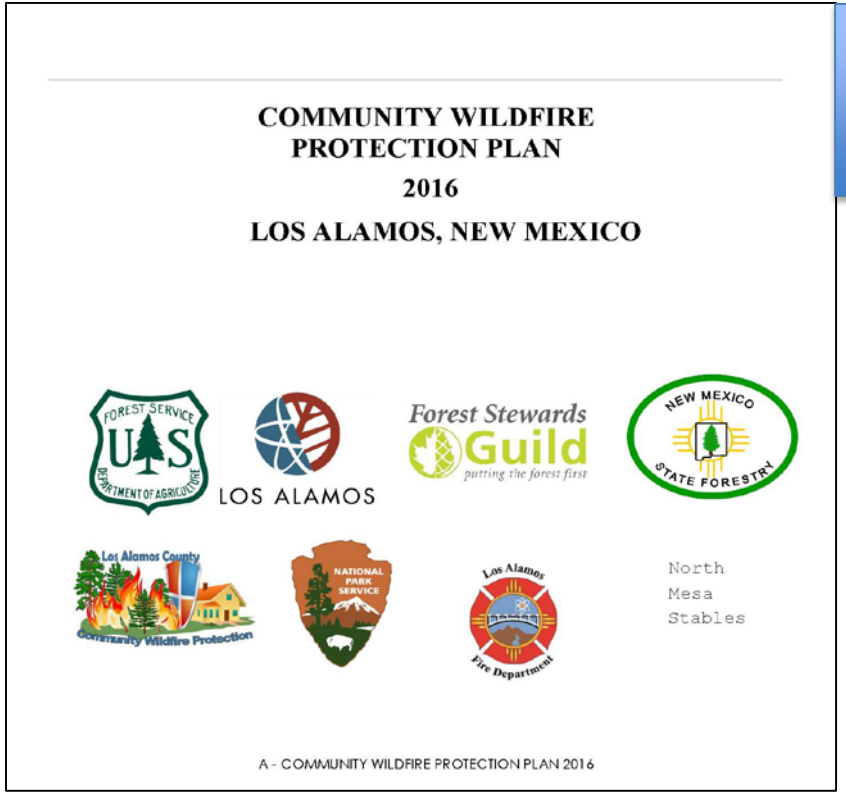


Proposed Areas for Vegetation Thinning

Community Wildfire Protection Plan

Area Selection

- Priority Areas identified for wildfire hazard mitigation in the CWPP
- Revised in 2016



TREATMENT AREA	ACRES
Camino Redondo	5.8
North Horse Stable Bench	23.2
North Loma Linda	18.5
Camino Uva Project	7.2
Ponderosa Estates Range Road	22.4
Villa Bench	17.9
Walnut Bench	18.9
TOTAL	**113.9**

Project Implementation

Tools:

- ✓ Chainsaws
- ✓ Pole saws
- ✓ Wood chipper

Materials: Use & Removal

- ✓ **Logs:** used to create holding ponds for wildlife habitat
- ✓ **Usable wood:** Stacked for Firewood
- ✓ **Woody Shrubs:** Chipped and dispersed throughout Project Area or removed to off-site disposal location

Implementation & Public Notice

- Implementation: Mon. – Fri. 8 AM to 5 PM
  - ***Exceptions:*** to accommodate requests, minimize impacts to sensitive populations, uses, resources
  - Weekend implementation: as requested/needed
- Door hangers
- Signage posted throughout area
- Public Service Announcements
- Community Networks

Hand and Mechanical Thinning

by County Wildland Fire Crews

Canyon Rim Mitigation Project

Before

After

Public Education: Home Assessments

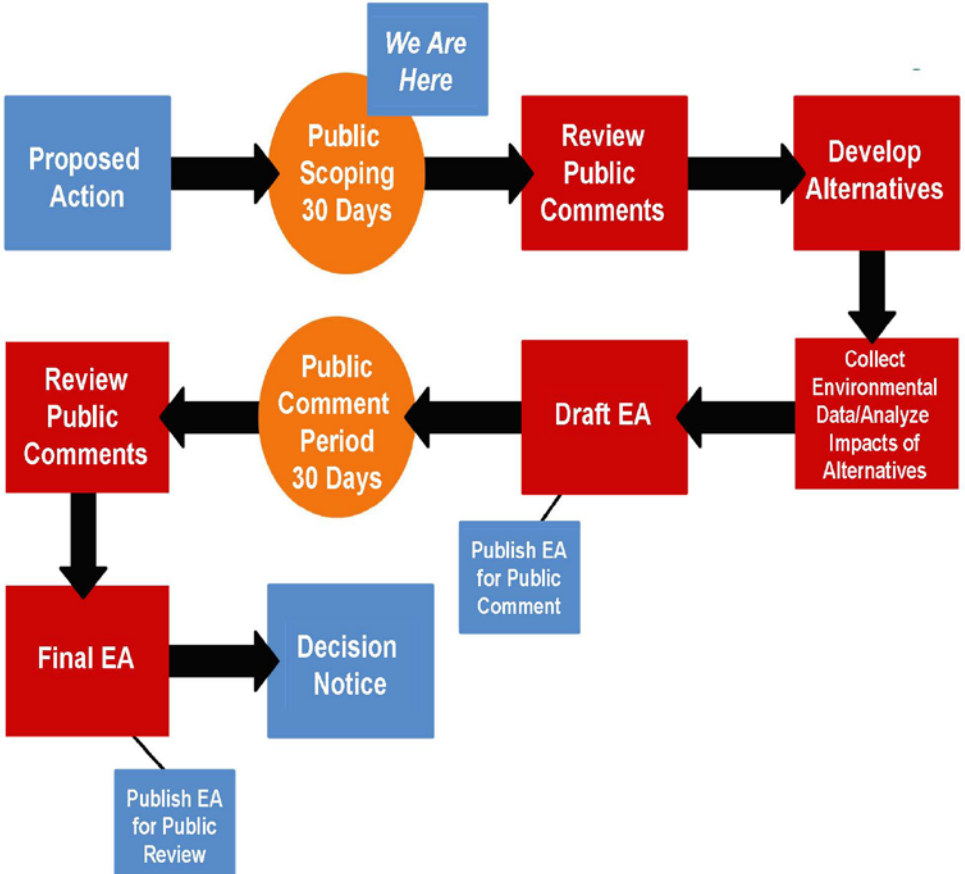
Community Outreach Events

- Fire Prevention Month -- October 8-14
- Community Wildfire Protection Plan updates: November
- Wildfire Awareness Day in April
- County clean-up day in May

Hazard Mitigation Grant Program

FEMA

National Environmental Policy Act



Environmental Analysis

- Purpose and Need, Alternatives
- Affected Environment and Potential Impacts
  - Air Quality
  - Water Resources
  - Biological Resources
  - Cultural Resources
  - Socioeconomic Resources

Schedule

Major Task	Schedule
Public Scoping Meeting	9/20
Draft EA	9/11—9/26
Submit Cultural Report to County and FEMA (for submission to SHPO)	9/22
SHPO 30-day Review of Cultural Report	9/25-10/25
Finalize Draft EA for public review & comment; Publish legal notice (10/29)	10/19—10/27
30-day Public Review & Comment Period; prepare FONSI	10/29—11/27
USFWS 30-day Review of Biological Assessment	10/29—11/27
Address public, USFWS & SHPO comments; finalize all documents	11/28—12/07
Submit Final EA to County & FEMA	12/08
Publish Notice of Final EA w/FONSI	12/10

APPENDIX F

Public Scoping Comments

Los Alamos County Wildfire Mitigation and Public Education Project Comment Form

Input may be submitted tonight using this form; or submitted electronically at LACproject@swca.com; or mailed to LAC Wildfire Mitigation Project, c/o SWCA Environmental Consultants, 130 Rock Point Dr. Ste. A, Durango, CO 81301; or by fax 970-385-1938. Please submit comments by September 27, 2017.

Note: *Individuals requesting that their name and home address be withheld from public review or from disclosure under the Freedom of Information Act must check "YES" in the column under "Name and Address." Such requests will be honored to the extent allowed by law.*

Name and Address	Do you wish to have your personal information withheld?
Georgia Strickfaden 2009 46th St., LA, NM 87544 buffalotours@att.net	YES ☐ NO ☒

Please provide written comments below.

What exactly does "clean it out" mean? – Defined – Thanks.

What about shelter-in-place for horses? A plan is needed for sheltering-in-place for horses, which in my opinion is far superior to evacuating horses from dirt corrals. Some of us have worked on the details of a shelter-in-place plan for North Mesa Stables. Would you like to see a copy of it?

Los Alamos Canyon Rim along Rim Trail by Smiths (on DOE land) needs thinning

I totally agree with what you're doing in thinning, etc. Thank you.

Educating homeowners, as you know, will be ongoing & totally necessary. Good luck.

From: Lawrence Ticknor [mailto:loticknor@gmail.com]
Sent: Thursday, September 28, 2017 4:13 PM
Subject: Re: Los Alamos Wildfire Mitigation Comments

These are comments on the "Wildfire Mitigation and Public Education Project following the public meeting on September 20, 2017. These comments come from information given and the meeting and also walking two areas after the 9/20/2017 meeting.

I am only making comments on two areas, because those are the only two I'm familiar with. These two areas are labelled on the map as the "Villa Bench" and the "Walnut Bench."

The maps for the area are pretty small and so it's hard to see the specifics of the two areas, but it's clear that parts of the Villa Bench are not included and it's hard to know if that's just because of the way the area was designated of if areas are specifically not being included.

The Villa Bench area has had fire mitigation work done previously. There area is rocky and generally dry and the last mitigation work left burn piles that were not burned. The Walnut Bench area is an area between single family housing and a much larger area that had fire mitigation work done previously.

For fire mitigation, the best course of action would be to remove all the vegetation. There are two competing uses that suggest this is not the best course of action. One use is wildlife habitat and the other use is scenic beauty or enjoyment of the natural area. Wildlife habitat use would suggest nothing should be done to these areas because wildlife needs a range of cover, shrubs, large trees, small trees (an all aged stand) and dead trees. Somewhere in the middle between perfect fire mitigation and wildlife habitat is scenic beauty, which is in the eye of the beholder and so can't be managed for.

The Villa Bench

The Villa Bench area, as pictured, is not specifically to protect houses because much of the area close to houses is not within the pictured area. There are "fingers" (side canyons) off the main Pueblo canyon that are drainages which have not previously been mitigated and only some of that area is pictured as being part of the mitigation work. The areas of the three (our of four) side canyons that have some mitigation work are all areas next to the main Pueblo Canyon and not areas next to the developed (residential or commercial) areas. There are no details about why some of these bits of side canyon are to be mitigated and other parts not.

These side canyons tend to be more densely vegetated since they have not been mitigated. Some have had fire mitigation work around the top where structures are located. The question is why were these left in the original mitigation work and why are they mostly not included in this second mitigation work. I often see deer heading into these area during the winter months and last week I saw a mother bear and two cubs in one of these areas. These side canyons are the best wildlife habitat in the area. There are dead trees out near the main canyon with a large population of woodpeckers, but the dense areas that allow the larger animals to hide are these side canyons. Near the main Pueblo Canyon there is mitigated area that would make it difficult for fire to spread up into these side canyons. And at the top of these side canyons are developed (residential mainly) areas. Since most of the side canyons are not being mitigated (according to what was given out at the public meeting) why do any of these side canyons? I see no reason to do a little of a couple of these side canyons. What is gained? No (or minimal) fire protection is gained and only scenic area and wildlife habitat is lost.

Mitigation should be to reduce the possibility for the spread of fire. Most of the area noted for fire mitigation in the "Villa Bench" has already been mitigated. The mitigation left a fairly even aged stand of trees (even aged from the notion that few are vigorously growing and are the larger trees that were there before mitigation) There are now down and dead trees which were not there after the previous fire mitigation effort, and a few, but very few, young trees. Those young trees are mostly not vigorously growing young trees, but rather slow growing young trees. A second mitigation will only hasten the demise of the trees on this bench by removing shade, increasing the dryness, and removing trees to take the place of the dying trees.

I see no reason to do a second mitigation in this Villa Bench area. The houses above this area will not have a significantly reduced chance of succumbing to a forest fire after this second fire mitigation work. If a fire can spread through this area that is already mitigated, then I don't see a second mitigation effort as significantly reducing this risk. The best protection for the houses is to have the houses do fire mitigation work at the individual houses. I see no benefit to spending resources at the Villa Bench. The burn piles could be taken away, but even that seems quite a bit of work for minimal returns. The high value return is to go to the individual residential lots and do fire mitigation at those lots.

The Walnut Bench

The Walnut Bench is an area between residential housing and the Walnut Canyon. The Walnut Canyon previously had fire mitigation work and is generally quite open and has a road down the middle. So the Walnut Canyon is one of the most fire defensible natural areas around. On the bench above the Walnut Canyon is the residential area. So for the "Walnut Bench" area to matter, a fire must be coming from the Walnut Canyon, which has been mitigated, or the fire must come from the housing area and move into the Walnut Bench area and then up and down the Bench, or a fire must start in the Walnut Bench area and move up and down the Bench. In walking the area, if a large fire is moving from the Walnut

Canyon area, which has been mitigated, another narrow strip that is also mitigated is not going to stop the fire – it's just more of the same where the fire is already. If a home is on fire and causes the Walnut Bench area to catch fire or a fire starts in the Walnut Bench area, then that might allow a fire to spread up and down the Walnut Bench and possibly crown and move to the Walnut Canyon. So there is some fire protection by mitigating the Walnut Bench.

If mitigated, there is also some losses. There is loss of wildlife habitat and loss of some screening – the houses screened from view by those recreating in Walnut Canyon and the people in Walnut Canyon screened from those residences on top of the canyon.

Are the losses offset by the fire mitigation effect. That's a judgement call. I would say not, but others might disagree. Not being a resident in that area I can't speak for those owners. Maybe the owners along the Walnut Bench should be asked what they prefer.

From: Heather McClenahan [mailto:heather@losalamoshistory.org]
Sent: Thursday, September 28, 2017 10:33 AM
To: Sterna, Kelly <kelly.sterna@lacnm.us>
Subject: Fwd: Wildfire mitigation and Kwage Mesa

Dear Chief Sterna,

Chief Hughes asked me to contact you with this information. The Historical Society and our partners look forward to working on this project with you. Please let me know if you have any questions and how we can help moving forward.

Regards,

Heather

---------- Forwarded message ----------
From: **Heather McClenahan** <heather@losalamoshistory.org>
Date: Thu, Sep 28, 2017 at 9:44 AM
Subject: Wildfire mitigation and Kwage Mesa
To: "Matteson, Linda" <linda.matteson@lacnm.us>, "Kirby, Kris" <kris_kirby@nps.gov>, Charles Strickfaden <Charles_Strickfaden@nps.gov>, Craig Martin <bikeandhikenm@gmail.com>, LACproject@swca.com, Ellen McGehee <emcgehee@lanl.gov>, "troy.hughes@lacnm.us" <troy.hughes@lacnm.us>
Cc: Schon Levy <sslevy@cybermesa.com>

Hi all,

I'm not quite sure what to do with this information, so I'm spreading it among many of us in hopes that we can start a conversation about it.

There was an article in the Monitor last Friday about a wildfire mitigation project being done by LAFD. http://www.lamonitor.com/content/lafd-starts-study-wildfire-mitigation-education-project

The project itself, of course, is great news. The potential problem is, one of the areas they are looking at is the historic trail along Kwage Mesa, where homestead fencing is attached to dead trees (that the fire department will most likely want to clear out), where beer cans and bottles that date to the Manhattan Project "litter" some areas, and, although it is not in the park legislation, the trail has been noted for its historic Manhattan Project significance and has been the topic of many conversations as a "low-hanging fruit" to interpret for Manhattan Project National Historical Park visitors.

Schon Levy, who introduced many of us to this trail, says featured areas of interest include:

1. One or more artifact scatters (mostly cans and bottles) relating to the late homestead era, Manhattan Project, and early Cold War era

2. Barbed wire fencing, some of it attached to downed and dead trees, relating to the homestead era and possibly to the Manhattan Project and early Cold War eras, potential study material for dendrochronology

3. Small felled tree, trimmed but abandoned, potential study material for dendrochronology.

4. Remains of butchered animal bones.

5. As-yet undiscovered artifacts relating to the eras mentioned above.

Is there a way we can work with the fire department to preserve the historic aspects of the site yet still meet the goals of wildfire mitigation?

Any help that any of you can provide to ensure everyone who needs to know about this does know about it will be greatly appreciated.

Heather

Heather McClenahan
Executive Director
Los Alamos Historical Society

Sharing Stories of 100 Years of the Los Alamos Ranch School, 1917-2017

PO Box 43, 1050 Bathtub Row
Los Alamos, NM 87544
http://www.losalamoshistory.org
heather@losalamoshistory.org
505-662-6272

On Thu, Sep 28, 2017 at 1:01 PM, Sterna, Kelly <kelly.sterna@lacnm.us> wrote:

Heather,

Great from hearing from you. Do you have a detailed map of where this area is located? I've copied our Environmental Assessment contractor on this so everyone is made aware of this site. Thank you again for the valuble information.

Sincerely,
Chief Kelly Sterna

From: Heather McClenahan [mailto:heather@losalamoshistory.org]
Sent: Thursday, September 28, 2017 1:21 PM
To: Sterna, Kelly <kelly.sterna@lacnm.us>

Cc: Shannon Manfredi <Smanfredi@swca.com>; Schon Levy <sslevy@cybermesa.com>
Subject: Re: Wildfire mitigation and Kwage Mesa

Chief Sterna,
I've copied Schon Levy on this e-mail. She has really been the champion of this project and of finding historic resources in the area, and she says she would be happy to do an on-the-ground survey with you (and/or folks from your team). I'm happy to join in when that happens.
Schon has some good Google maps of the area showing fence lines, etc. that she can probably share with you.
Thanks!
Heather

On Sep 29, 2017, at 9:50 AM, Shannon Manfredi <Smanfredi@swca.com> wrote:

Hello Heather and all—
This is Shannon with SWCA Environmental Consultants (i.e., contractor completing the environmental and cultural clearance process for the project on behalf of the County and FEMA). Thank you for the information about historic properties in and around the project area. I wanted to echo Chief Sterna's request of sending along a google map or KMZ of the historic trail along Kwage Mesa and any other historic or cultural features you think may be within the treatment areas. Once we get the maps, we will overlay it with the treatment areas and compare the information with our cultural field survey findings of the Project Area. SWCA has completed a cultural field survey for 100% of the project area and is currently preparing a report of those findings that will be sent to the County and FEMA next week and then sent to the State Historic Preservation Office for review.

Although we are scheduled to send this Draft Report out for Review next week, there is still time for us to review and incorporate your information as appropriate before sending to SHPO; so please send along location information as soon as possible. If we have questions, William (Bill) and/or Cherie—both copied on this email, will follow up with you. (Bill and Cherie are SWCA's Archeologist/Cultural Resource Specialist working on this project that completed the field survey and Cultural Report.)

Thanks again for bringing this to our attention. We look forward to getting maps from you.
-Shannon

From: Schon Levy [mailto:sslevy@cybermesa.com]
Sent: Monday, October 2, 2017 12:42 PM
To: Shannon Manfredi <Smanfredi@swca.com>
Cc: Heather McClenahan <heather@losalamoshistory.org>; kelly.sterna@lacnm.us
Subject: Re: Wildfire mitigation and Kwage Mesa

Hello Shannon,

In Heather's absence until tomorrow, I am sending you a DRAFT image showing my best estimate as to where artifacts relating to the homestead era, Manhattan Project, and Cold Ware era are concentrated. This is shown as an area outlined in black adjacent to the trail along the north edge of the dressage arena . We had not begun to examine most of the area included in the

treatment area when we became aware last week of the proposed mitigation project. It would be helpful if you could share information from your cultural field survey.

Official input will be sent to you through Heather.

Best regards,
Schön Levy

On Tue, Oct 3, 2017 at 12:36 PM, Shannon Manfredi <Smanfredi@swca.com> wrote:

Hello Levy, et al.—

Thank you for the image you sent. Attached please find a KMZ of the 2 polygons proposed for treatment, referred to as "North Horse Stable Bench." In my comparison of the KMZ and the image you sent us, it appears that the area outlined in black, i.e., area of your concern, is just east of the proposed treatment center by appx. 154 yards. I wanted to get a response to you before too much time passed; and mostly to acknowledge receipt of your email. I have copied the archeologist working on this project and I will be speaking w/them more about this later in the week and will aim to follow up w/you early next week. Thanks again for this information. -Shannon

-----Original Message-----
From: Schon Levy [mailto:sslevy@cybermesa.com]
Sent: Wednesday, October 4, 2017 9:11 AM
To: Shannon Manfredi <Smanfredi@swca.com>
Cc: Heather McClenahan <heather@losalamoshistory.org>; Kelly Sterna <kelly.sterna@lacnm.us>; William Whitehead <WWhitehead@swca.com>; Cherie Walth <cwalth@swca.com>
Subject: Archaeological exclusion map - final

Hi, Shannon,

Heather has reviewed and approved the draft archaeological exclusion map, so here is the final map. It's the same as the draft that I sent Monday.

I was relieved to see that the eastern end of the mitigation area has moved farther west on the map you sent yesterday. This will relieve some of the pressure on us to make a quick identification of archaeological features in the area where they seem most numerous.

Schön

Executive Order (EO) 11988 – Floodplain Management

Eight-Step Decision Making Process

EO 11988 (Floodplain Management) requires federal agencies "to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development whenever there is a practical alternative." This eight-step process is applied to the proposed Los Alamos County Wildlife Mitigation and Public Education Project (hereafter referred to as the proposed project or proposed action). The proposed project involves thinning vegetation on approximately 114 acres of land managed by Los Alamos County. The areas identified to be treated through the proposed action are all within the Wildland Urban Interface (WUI) and would promote defensible space from a wildfire threat for approximately 750 residential homes, as well as for two schools, and the Los Alamos National Laboratory Pueblo Complex.

Step 1 Determine if the proposed action is located in the Base Floodplain

Approximately 0.15 acres of the proposed project is located in Zone A of the 100-year Floodplain, per FEMA Flood Insurance Rate Maps 35028C0040C and 35028C0045C, dated 07/18/2011. This flood zone narrowly follows Pueblo Canyon Creek. Per the U.S. Fish and Wildlife Service's National Wetlands Inventory map (NWI) there are approximately 0.09 acres of wetlands within the project area.

Step 2 Early public notice (Preliminary Notice)

Early public notice concerning the proposed wildfire mitigation project and public meeting was made to the public via public service announcements in the Los Alamos Daily Post on September 12, 2017 and the Los Alamos Monitor on September 22, 2017. The project and public meeting was also announced on local radio channels and on the local television channel. Additionally, a stakeholder letter was mailed to the project contact list and posted on project webpage. The contact list included local, state and federal government agencies, tribal government offices and interested individuals. A public meeting to learn more about the project was held on September 20, 2017.

Step 3 Identify and evaluate alternatives to locating in the base floodplain

Relocating the proposed project area to avoid floodplains and wetlands would require that portions of the project area not undergo hazardous fuels reduction. The Villa Bench treatment area has been identified for vegetation thinning to mitigate the spread of wildfire. The continuity of the hazardous fuels reduction footprint through this high-risk project area must not be broken for the project goals to be met. Eliminating this small portion from the project activities, thereby taking the project out of the floodplain and wetlands, and leaving a gap in the fire-barrier, is not a practicable alternative because it may cause the entire project to fail and therefore would not meet the purpose and need for the mitigation activity.

Taking no action would incur no costs for the County and would cause no construction-related environmental impact to floodplains and wetlands, but would fail to address the threat of spreading

wildfire between Pueblo Canyon and the residential areas north of the Villa Bench proposed treatment area. The no action alternative would not meet the purpose and need for the project and is not a practicable alternative.

Step 4 Identify impacts of proposed action associated with occupancy or modification of the floodplain

The proposed action would not significantly affect the functions and values of floodplains and wetlands in the project area. The proposed action would not result in any discharge of dredged or fill materials nor would it result in any structures or fill within floodplains and wetlands that would that would affect their functions. The proposed project would not promote development within floodplains and wetlands. Soil disturbances would be avoided by conducting the work by hand within wetlands and within 100 feet of wetlands. No rootballs of removed vegetation would be disturbed.

The functions of floodplains and wetlands to filter nutrients and impurities from runoff; to provide floodwater storage; to reduced flood velocities; to reduce flood peaks; to reduce sedimentation; and to promote infiltration and aquifer recharge will remain intact after the implementation of this project because vegetation would be thinned but not removed completely. Floodplains and wetlands also provide services in the form of providing fish and wildlife habitat, breeding, and feeding grounds. These values will not be adversely impacted as a result of the proposed action and the overall integrity of the ecosystem will not be impacted.

FEMA has determined the project may affect, but will not likely adversely affect two federally listed species—the Mexican Spotted Owl (federally listed threatened species) and the Jemez Mountains salamander (federally listed endangered species). There is no designated critical habitat for these species within the proposed project area. Project conservation and mitigation measures have been incorporated into the proposed action to reduce potential effects on these species. The proposed action would have negligible impacts to native species and their habitats and would not contribute to a downward trend in native species population levels. To mitigate the potential for adverse impacts to migratory bird species and the Mexican Spotted owl, cutting or removing vegetation, including snags, would occur outside of the migratory bird breeding season (March 1–August 31). If vegetation removal cannot avoid the bird breeding season, nesting surveys would be completed prior to project implementation to identify any occupied nests and establish avoidance buffers until the young have fledged. If vegetation removal cannot avoid the bird breeding season, nesting surveys would be completed prior to project implementation to identify any occupied nests and establish avoidance buffers until the young have fledged. While there may be temporary (lasting a maximum of three weeks) impacts to open space lands and recreation trails within and adjacent to the project areas, the proposed action would not adversely affect the societal and recreational benefits provided by the floodplain in these natural areas.

The hazardous fuels reduction activities would reduce the potential for the negative effects of a major wildfire on soils if a wildfire occurs. A wildfire could alter the cycling of nutrients; the physical and chemical properties of soils; and the temperature, moisture, and biotic characteristics of the existing soils. These primary impacts from a wildfire could also result in decreased infiltration and increased runoff, which often causes increased erosion. These potential negative effects of a major wildfire on

the natural wetland functions would be reduced through implementation of the proposed action.

Step 5 Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values

The vegetation thinning activities will not have significant adverse effects on the natural values provided by floodplains and wetlands. The controlled vegetation removal will protect the natural environment from spreading wildfire, and reduce the impact of destruction to property and possible loss of life. The proposed project would not result in the destruction, loss, or degradation of floodplains or wetlands.

The project conservation measures would include the installation of waterbars on steep canyon slopes to minimize erosion and would limit cross country travel of the wheeled chipper to one path in and out of each treatment unit and only when soils are dry. No chipped materials will be dispersed into water bodies and no trees will be felled into waterbodies, including wetlands and the floodplain associated with Pueblo Canyon Creek. Waste materials will be managed and disposed of in accordance with applicable, local, state and federal regulations. If contaminated materials are discovered during the construction activities, work will cease until the appropriate procedures and permits can be implemented.

Impacts to federally listed species will be mitigated by the avoidance and minimization measures outlined in the consultation with the U.S. Fish and Wildlife Service (USFWS) in Section 3.2.2.2 of the EA. Impacts to migratory bird species will be minimized by seasonal restrictions such that work is conducted outside of nesting season or that nesting surveys will be completed prior to project implementation to identify any occupied nests and establish avoidance buffers until the young have fledged.

The City will be required to coordinate with the local floodplain administrator and the U.S. Army Corps of Engineers to obtain any required permits for work within these areas prior to the start of construction. The City will be required to comply with all permit conditions.

Step 6 Determine if proposed action is practicable and re-evaluate alternatives

FEMA maintains that the proposed action alternative is the only practicable alternative to meet the purpose and need of the project. This section may be revised following public comment on the EA and this 8-step evaluation if significant comments are received regarding floodplain impacts.

Step 7 Findings and public explanation (Final Notification)

Step 7 requires that the public be provided with an explanation of any final decision that the floodplain is the only practicable alternative. In accordance with 44 CFR §9.12, the Notice of Availability of the Draft Environmental Assessment will serve as Final Notification. The Notice of Availability of the Draft Environmental Assessment document will be published in the Los Alamos Daily Post. Public comment on the propose project and Environmental Assessment will be open for 30 calendar days. The Notice will include the name, proposed location and description of the activity, and an indication that portions of the action are located in floodplain and wetlands and will provide the public with an explanation of the final decision that locating the project in the floodplain and wetland is the only practicable alternative.

Step 8 Implement the action

Step 8 is the review of the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in 44 CFR Part 9.11 are fully implemented. The proposed fuels reduction project will be conducted in accordance with applicable floodplain development requirements.

The County will adhere to the grant conditions outlined in the Finding of No Significant Impact issued for the EA for the proposed action.

The County will assure that this plan, as described above, is executed and necessary language will be included in all agreements with participating parties. The County will also take an active role in monitoring the construction process to ensure no unnecessary impacts occur within the identified wetland and floodplain areas nor unnecessary risks are taken.