Draft Environmental Assessment
Claunch-Pinto Soil and Water Conservation District Fuels Reduction Project
HMGP-5281-0001-NM

Torrance County, New Mexico

October 2022

FEMA

Federal Emergency Management Agency
Department of Homeland Security
800 N. Loop 288
Denton, TX 76209

CLAUNCH-PINTO SOIL AND WATER CONSERVATION DISTRICT FUELS REDUCTION PROJECT DRAFT ENVIRONMENTAL ASSESSMENT

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SWCA Project No. 58692

October 2022

ACRONYMS AND ABBREVIATIONS

CO_2	carbon dioxide
CPSWCD	Claunch-Pinto Soil and Water Conservation District
CWPP	Community Wildfire Protection Plan
dB	decibel
drc	diameter at root collar
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
HMGP	Hazard Mitigation Grant Program
HUC	Hydrologic Unit Code
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMCRIS	New Mexico Cultural Resource Information System
NMDHSEM	New Mexico Department of Homeland Security and Emergency Management
NMED	New Mexico Environment Department
NRHP	National Register of Historic Places
OMI	Office of the Medical Investigator
$PM_{2.5}$	particulate matter smaller than 2.5 microns
PM_{10}	particulate matter smaller than 10 microns
SDI	Stand Density Index
SHPO	State Historic Preservation Office
SWCA	SWCA Environmental Consultants
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WUI	Wildland Urban Interface

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1 INTRODUCTION

The Claunch-Pinto Soil and Water Conservation District (CPSWCD) has developed the CPSWCD Fuels Reduction Project (hereafter referred to as the project or Proposed Action) to reduce the density of fuels, both standing and on the ground, prevent the potential spread of wildfire, create defensible space around residential areas and critical facilities, protect the lives and safety of citizens, protect wildlife habitat across the project area, and promote ecosystem health. Specifically, the project would thin vegetation on approximately 298 acres of private lands in Torrance County, New Mexico. CPSWCD has already developed landowner agreements to conduct work in those areas.

Torrance County is located east of the Manzano Mountains in central New Mexico. Torrance County encompasses 3,346 square miles, with the Cibola National Forest to the west and private land holdings to the east. The topography of the County is characterized by flat plains, with a continuous upslope to the prominent ridgeline of the Manzano Mountains. The elevation changes from mountaintop to flatland, ranging from 10,098 feet to 5,148 feet, which provides for diverse flora and fauna. The project locations are at an elevation ranging from 6,648 to 7,111 feet and hold a mix of pinyon-juniper woodlands with interspersed oak (*Quercus* sp.) shrub patches.

Torrance County is like 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.

Since 2008, catastrophic wildfires in and around Torrance County have led to significant changes to the Manzano Mountains where over 44,500 acres (Figure 1.1) have burned in four separate incidents (Ojo Peak, Trigo, Big Springs, and Dog Head wildfires). These fires have cost over $32,000,000 for fire suppression activities and have resulted in extensive damage to watershed health and functioning. These catastrophic wildfire events demonstrate the propensity for wildfires to occur within and surrounding Torrance County and underscore the need to reduce fuel loads in densely forested areas to create defensible space around community centers, critical facilities, and residential areas.

Due to varying topography, population centers have developed in the densely stocked forested environment throughout Torrance County. Access to these communities is usually serviced by a single road that provides access in and out. The limited access and dispersed configuration of population centers hinders the ability for rapid emergency response during wildfire events. Land management agencies have been implementing vegetation treatments to reduce fuel loads throughout Torrance County for more than 20 years; however, not all areas have been treated.

Given these challenges, a critical component to mitigating the wildfire hazard in the County is to create and maintain defensible space around residential homes and population centers by way of wildfire hazard mitigation. Hence, CPSWCD applied for financial assistance through the Federal Emergency Management Agency's (FEMA's) Hazard Mitigation Grant Program (HMGP) to implement a wildfire hazard mitigation project focused on treating high-risk neighborhoods throughout the CPSWCD (FEMA 2022a). The proposed project meets the HMGP's purpose and criteria.

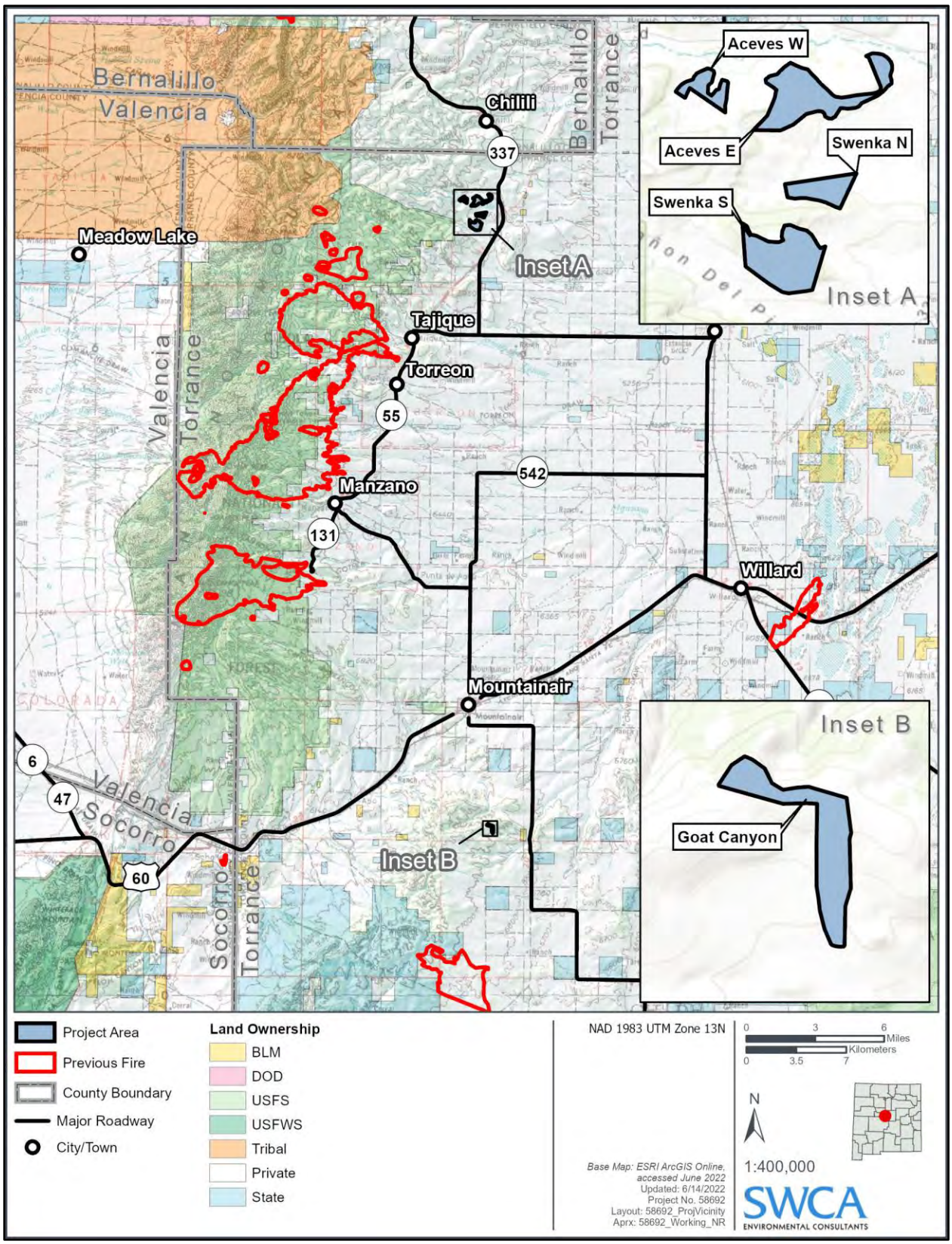

Figure 1.1. Project vicinity in relation to previous fires.

Torrance County developed a Community Wildfire Protection Plan (CWPP) in 2008 and revised it in 2016. The proposed project would meet the objectives of the CWPP for Torrance County (SWCA Environmental Consultants [SWCA] 2016a) and for the CPSWCD (SWCA 2016b). The Healthy Forest Restoration Act of 2003 (16 United States Code [U.S.C.] 6501–6591) was established to promote wildfire hazard mitigation in the Wildland Urban Interface (WUI) and authorizes benefits to communities that have developed a CWPP. All areas to be treated by the project are within the WUI and have been prioritized for treatments in the Torrance County CWPP.

This Environmental Assessment (EA) 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 CPSWCD Fuels Reduction Project. FEMA would use the findings in this EA to determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact (Appendix E).

SWCA conducted a pedestrian natural resources survey of the project area on May 19 and 20 and July 8, 2022, 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 (ESA), jurisdictional drainages, or sensitive aquatic habitats regulated by the U.S. Army Corps of Engineers under the Clean Water Act, as well as active and inactive migratory bird nests protected by the Migratory Bird Treaty Act (MBTA). Additionally, SWCA conducted a 100% (intensive) cultural resources pedestrian inventory on nonconsecutive days between April 15 and June 10, 2022.

2 PURPOSE AND NEED

Through the HMGP, FEMA provides grants to states, territories, Indian tribal governments, and local governments to implement long-term hazard mitigation measures. The purpose of the 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 USC §§ 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 Home Ignition Zone of the CPSWCD to reduce wildfire hazard that puts the lives of citizens and firefighters at risk and that threatens residential structures, schools, and critical infrastructure (SWCA 2016a). There is also a need to develop defensible space around private lands, in addition to maintaining private forest resources.

CPSWCD aims to mimic the New Mexico State Forest Division desired forest fuel load conditions and forest treatment standards with this project. Thinning prescriptions would be designed in accordance with existing fuel loading, topographic constraints, and the use of the Stand Density Index (SDI). The SDI can be used as a guideline for thinning a multiple age-class timber stand (Page 2008). This method would be preferred over a diameter limit prescription because it allows the timber stand to have diversity within its age class.

3 ALTERNATIVES

This chapter provides a detailed description of the No Action and the Proposed Action Alternative, and a brief description of an alternative that was considered but eliminated The No Action and Proposed Alternatives were developed based on collaborative planning and data collection and review. This section also contains a list of project conservation measures that the CPSWCD is committed to following during project implementation.

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 identified in the CWPP. Population centers, schools, and nearby structures would continue to be at risk from catastrophic fire events under current management activities, including the maintenance of existing facilities. The current methods of wildfire suppression used by the local, state, and federal agencies 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 298 acres of private lands to reduce the wildfire hazard around adjacent population centers, including residential neighborhoods and local infrastructure (Figures 3.1 through 3.4). The Proposed Action would include mechanical thinning of trees and shrubs at multiple locations. Mechanical treatments would include tools and techniques that include thinning of trees with masticators, chainsaws, and treating the slash with mechanized equipment such as chippers.[1] In general, slash material would be chipped in place using a woodchipper and ensuring that chips are no deeper than an average of 2 inches and no greater than 6 inches in any one spot. The larger diameter material would be hauled away from the project area[2]. Additional Project Conservation Measures are outlined in Section 3.2.3.

[1] Staging of vehicles and equipment is not anticipated in the project area, as no equipment would be left on site overnight.

[2] The larger diameter material would be taken to an off-site location that would be dependent on project area location. The material from Aceves site would be taken to Ranch headquarters and used as firewood. At the Swenka site, the lager diameter material will be masticated. At the Goat Canyon site, the larger diameter material would be taken to the Claunch Pinto District office to be used as firewood.

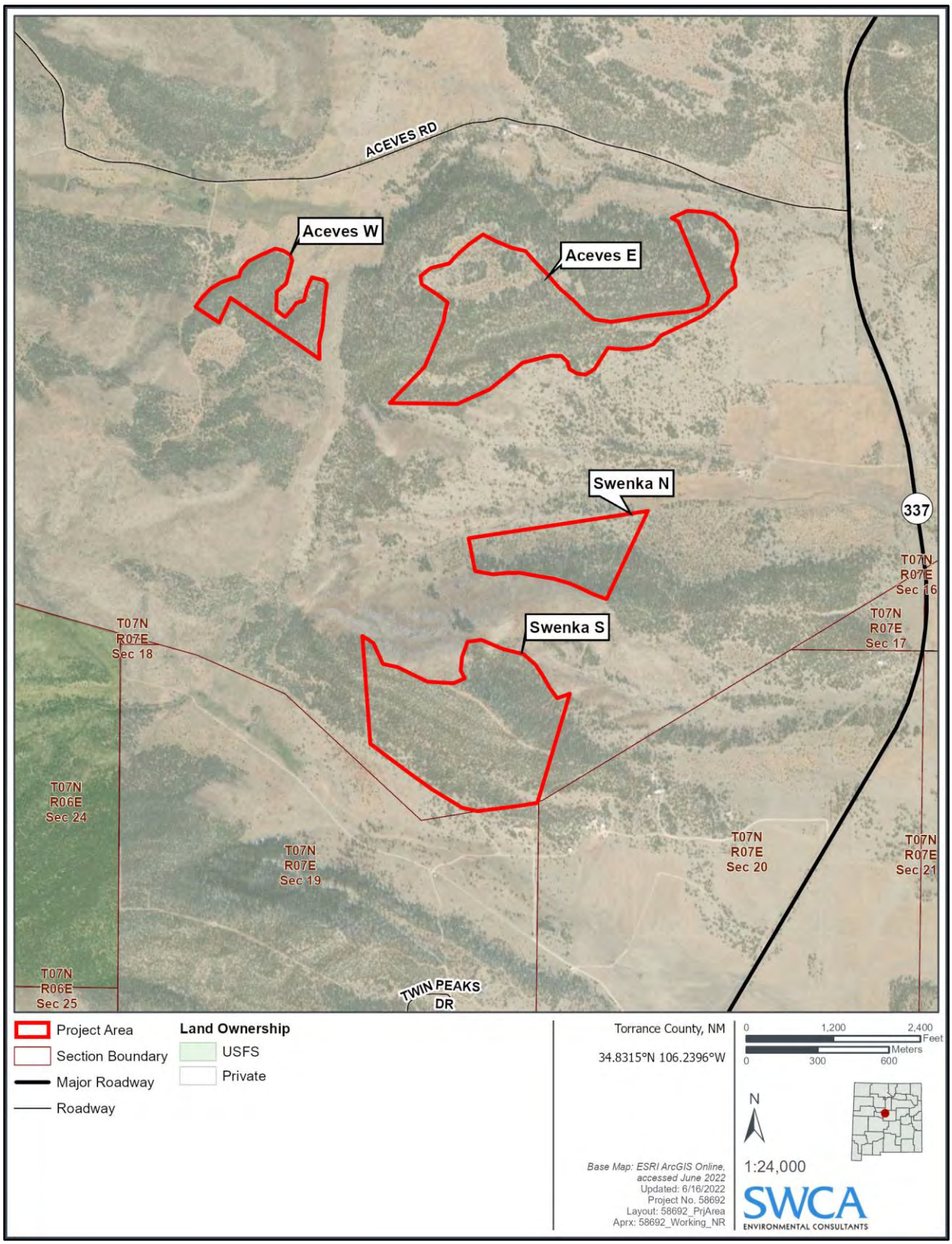

Figure 3.1. Project area including the Aceves E, Aceves W, Swenka N, and Swenka S sites.

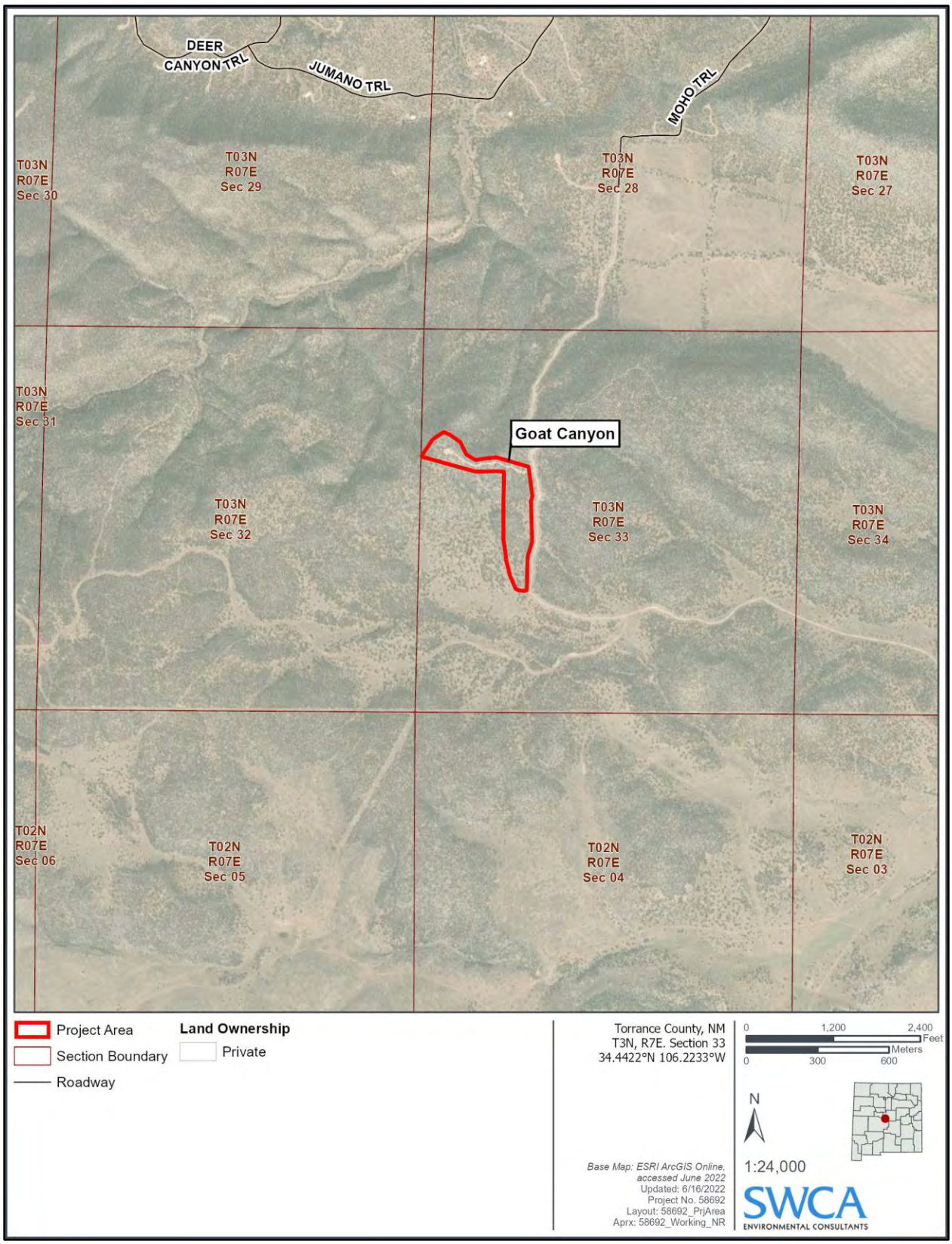

Figure 3.2. Project area for the Goat Canyon site.

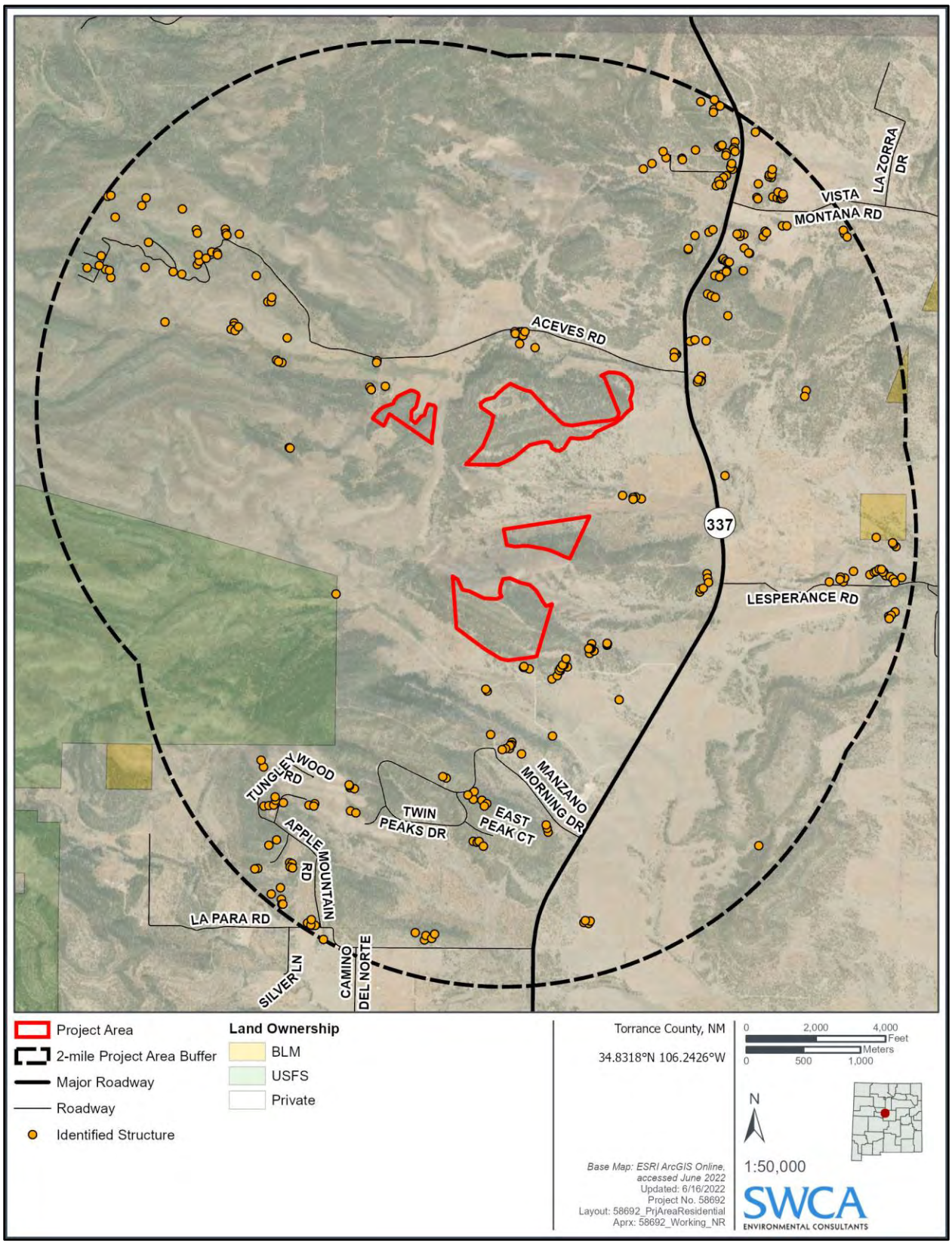

Figure 3.3. Project area with residential homes within 2 miles of the Aceves E, Aceves W, Swenka N, and Swenka S sites.

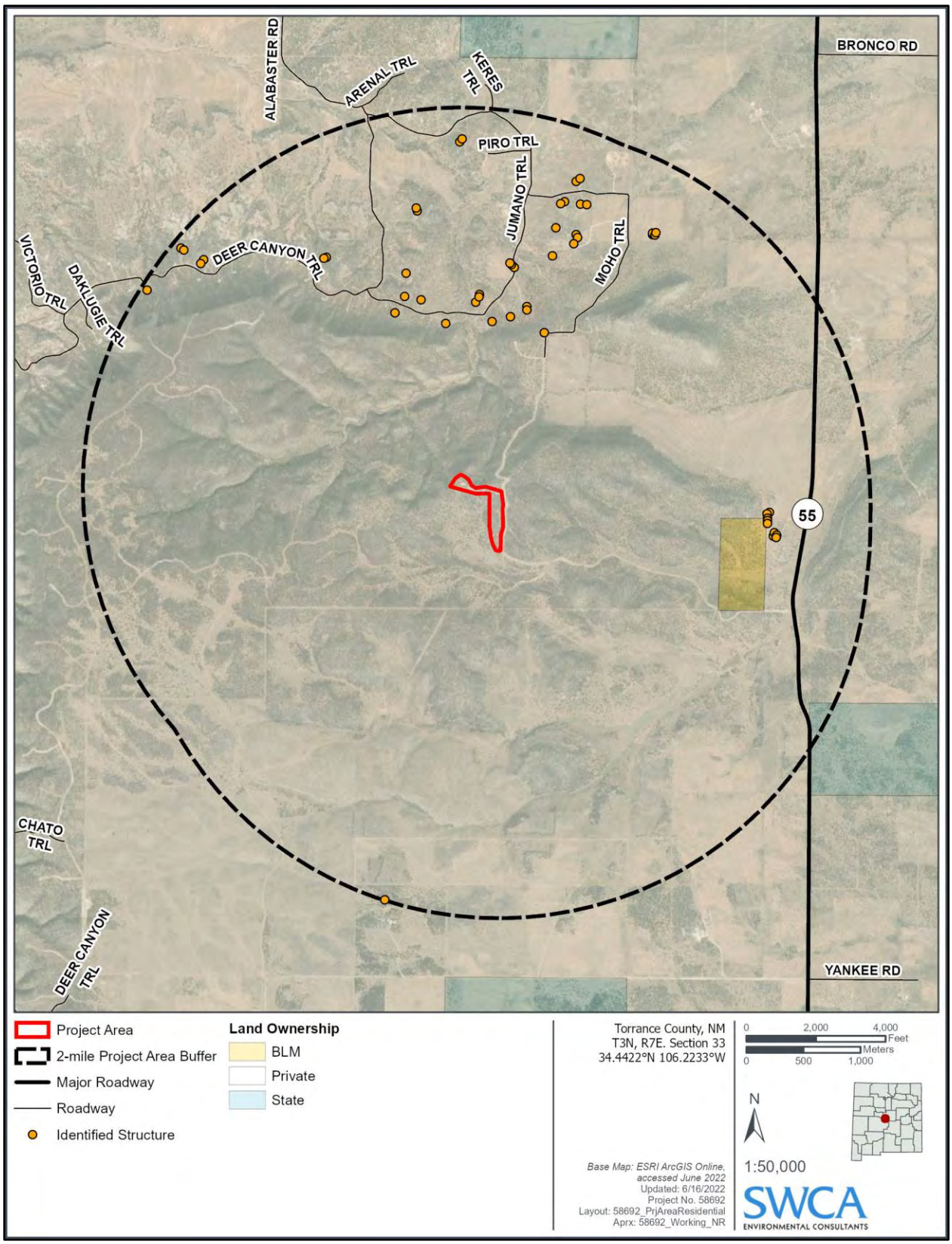

Figure 3.4. Project area with residential homes within 2 miles of the Goat Canyon site.

3.2.1 Desired Conditions

Desired vegetation conditions for the entire project area are those that reduce the potential for active crown fires and provide for public and emergency personnel safety in the event of a wildfire. These are the conditions that implementation of the Proposed Action is seeking to achieve. Overall, the desired conditions include the following:

- Managing for uneven-aged stand conditions for live trees to include tree groups.
- The use of low-impact forestry techniques to minimize wildlife, soil, and watershed disruptions.
- One to five dead trees per acre may be left for wildlife. Trees need to be free of any needles. Trees with more than one fork are most desirable for wildlife trees.
- Managing for old age trees such that as much old forest structure as possible is sustained over time across the landscape.
- Sustaining a mosaic of vegetation densities, age classes, canopy gaps, and species composition across the landscape that reduces the spread of unnatural crown fires.
- Leaving trees with healthy crowns free of disease and damage are preferred over sparse-crowned, diseased, damaged, or deformed trees.
- Full-crowned trees are left after thinning over trees with sparse crowns.
- Within moderation, trees with interlocking crowns within a group should be left to provide wildlife habitat.
- Allowing for heterogeneity within the unit, while not allowing for one biological species to be favored over another and promoting biodiversity.
- The preservation of watershed and soil integrity within the unit by establishing buffers around water sources and other sensitive areas.
- Thinning to at least an average of 40–60 square feet of basal area. Random openings would be created.
- Chipping is preferred; chip depths are not to exceed an average of 2 inches deep and no greater than 6 inches in any one spot. Chips should not be accumulated under the drip lines of leave trees or within 10 feet of structures or woodpiles.
- Windrows made with local slash may be used to slow rainfall runoff.

Pinyon-Juniper Woodland – The project area is characterized by mostly pinyon-juniper woodlands with some ponderosa pine at higher elevations with interspersed grasslands or oak shrublands (see section 4.8.1 for a description of vegetation within the project area). Within the pinyon-juniper woodland, the existing condition for both is deficient of trees greater than 16 inches diameter at root collar (drc). This project proposes to avoid cutting any trees over 16 inches drc to assist in moving the area toward the desired condition. Additionally, the average basal area at the three sites within the project area ranges from 120 to 138 square feet per acre, which largely exceeds desired basal area conditions for this forest type.

3.2.2 Treatment Prescription

The management of an uneven timber stand is best achieved by using the SDI. This timber practice allows for the retention of a diverse age class within the timber stand. The timber stand would be categorized into age classes based on species and diameter at breast height or, in this case, drc. Studies have shown

that for each age class, no more than 25% per age class should occupy a unit. This promotes healthy growing conditions within the timber stand, without competition between age classes (Page 2008).

The trees within the proposed project area would be treated with masticators and chainsaws, while the slash would be treated with a chipper and left onsite. It is expected that contract crews would implement the treatments.

3.2.2.1 PINYON-JUNIPER WOODLAND TREATMENTS

Treatments in the pinyon -juniper woodland community type would follow an uneven-aged group selection silviculture system (where trees are found in three or more distinct age classes, either mixed or in small groups) (where trees are removed and new age classes are established in small groups, and where regeneration, growth, and yield are regulated in an aggregation of groups). Within groups, designated trees would be thinned from below in order to increase the canopy base height by 30%–40%. Spacing of groups would be irregular, and openings between groups would vary in size. Approximately 10 percent of this forest type would be converted to temporary openings to encourage natural regeneration.

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

1. Thinning to an average of 40–60 square feet of basal area.
2. Thinning to retain a variety of size classes by each species.
3. Avoiding thinning of alligator juniper (*Juniperus deppeana*) because of excessive resprouting when cut. Cutting only when necessary to meet Firewise standards around homes and forest health objectives.
4. Creating random openings and not spacing trees evenly; basal area should average 40–60 square feet across the stand.
5. Removing insects and diseased trees before thinning.
6. Avoiding the stacking of wood or chips under the drip line of any trees.
7. Minimizing the pruning of pinyon and ponderosa pines (*Pinus ponderosa*).
8. Stacking pinyon firewood left onsite in piles 4 feet in length, no larger than a half cord in size, in full sunlight and at least 100 feet from any structures.
9. Chipping or mastication is preferred; chip depths are not to exceed an average of 3 inches deep and no greater than 6 inches in any one spot. Chips should not be accumulated under the drip lines of leave trees or within 10 feet of structures or woodpiles.
10. Where mastication operations are used, 60% of the mulched material shall be less than 3 inches in diameter and no longer than 3 feet in length, and mulch depth shall be less than 3 inches on average. No mulch depth shall be allowed over 6 inches in any circumstance. Mulch should not be accumulated under the drip lines of trees or within 10 feet of structures or woodpiles.

The project area would be accessed by existing roads; no new roads would be built. All treatments would be conducted on private lands and implemented by private contractors. The timing of treatments would be dependent on area-specific considerations and seasonal wildlife restrictions. Treatments would begin once the environmental analysis process is completed and immediately upon receiving the grant and notification to proceed from FEMA. Treatments are expected to be completed within 1 year, once approval is granted and project implementation begins. After implementing the project, vegetation

maintenance in the project area would be ongoing to maintain desired conditions and to mitigate the wildfire hazard.

3.2.3 Project Conservation Measures

No permits would be required for the Proposed Action (as summarized in Table 5.1 in Section 5). Activities in the project area would comply with the project's scope of work methodology described in Section 3.2.2. The CPSWCD 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 would require re-evaluation for compliance with NEPA and other applicable laws and regulations. Below is a list of conservation measures that the CPSWCD is committed to following during project implementation. As applicable, these will be integrated into the analysis of the project's impact on each resource.

3.2.3.1 SOILS, WATER, AND VEGETATION RESOURCES

Soil-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.

Soil-2: To mitigate impacts from soil compaction, off-road use of wheeled equipment will be restricted to using one path in and out of each project area.

Water-1: No chipped materials will be dispersed into water bodies, and no trees will be felled into water bodies.

Water-2: 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.

Water-3: The contractor and their personnel will be briefed, and a responsible party will sign off on local environmental considerations specific to the proposed project tasks.

Vegetation-1: 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.

Vegetation-2: The accumulation of chipped materials will be limited to an average maximum of 2 inches deep and no greater than 6 inches deep in any one spot 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. Chips should not be accumulated under the drip lines of leave trees or within 10 feet of structures or woodpiles.

3.2.3.2 AIR RESOURCES

Air-1: Vehicle speed on levee roads will be limited to 15 miles per hour, which will also minimize dust.

Air-2: In order to mitigate impacts, all machinery and vehicles used in project implementation will be properly maintained and stored to limit the amount of greenhouse gases that are emitted.

3.2.3.3 WILDLIFE RESOURCES

Bird-1: In compliance with the MBTA and Bald and Gold 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.

Bird-2: No burning of piles of removed vegetation will be conducted.

3.2.3.4 CULTURAL AND HISTORIC RESOURCES

Cultural-1: For cultural resource sites LA194426, LA 201086, LA 201088, LA 201089, LA 201090, LA 201097, LA 201084, LA 201085, LA 201087, LA 201091, LA 201092 LA 201095, and LA 201096 the boundaries of the site will be subjected to hand and mechanical treatments only, with no use of heavy equipment. Vegetation will be removed by hand and chipped outside the site boundary. Temporary barriers will also be placed at these sites to prevent heavy equipment from entering.

Cultural-2: In the event that archaeological 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 archaeological findings will be secured and access to the sensitive area will be 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), New Mexico Statutes Annotated 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. CPSWCD will immediately notify FEMA and law enforcement agencies of the discovery, which shall notify the Office of the Medical Investigator (OMI) and the State Historic Preservation Office (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 SHPO, who shall proceed pursuant to the Unmarked Burial Statute and its implementing regulations found at 4.10.11 New Mexico Administrative Code. For any questions regarding human remains on state or private land, contact State Archaeologist Bob Estes, (505) 827-4225, Fax (505) 827-6338, bob.estes@state.nm.us.

3.2.3.5 PUBLIC HEALTH AND SAFETY

Public-1: Personnel and public safety will be the highest priority when implementing thinning activities.

Public-2: To minimize potential occupational safety and health risks, construction workers and equipment operators are required to wear appropriate personal protective equipment and to be properly trained for the work being performed.

Public-3: Transport of personnel and equipment will use existing roads.

Public-4: 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 ESA.

Public-5: To minimize noise disturbance impacts, implementation activities will be limited to occur between the hours of 7 a.m. to 6 p.m., and all equipment and machinery used will meet all applicable local, state, and federal noise control regulations.

3.3 Alternative Considered and Eliminated from Detailed Analysis

During application development, CPSWCD considered the alternative of forest thinning without removal of excess hazardous fuels. Forest thinning has been shown to help alleviate the spread of crown fire, however, without a treatment prescription to remove the heavy slash, the fuel load shifts from standing fuels to heavy surface fuels. When heavy fuels are left on the surface the fuel loading threatens fire/heat damage to ecosystem, soils, infrastructure, and potentially increases the rate of fire spread. If a wildfire did occur, the relocation of area residents to a fire safe area may cost $5,000,000. The final wildfire size may be hundreds if not thousands of acres and homes burned.

The proposed action includes forest thinning with slash mastication and fuel removal. The proposed project area was refined after consideration to maximize the treatment area within the pinyon-juniper woodland. The final proposed project area was identified to maximize the fuel reduction within the pinyon-juniper woodland cover type and avoids impacts to water resources in the area. No other alternatives were 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 environments.

For the purposes of this analysis, short-term or temporary impacts are defined as those that cease after implementation of the wildfire mitigation activities are complete (estimated at 2 years); long-term or permanent impacts are defined as those remaining on the landscape after the short-term (temporary) time period.

4.1 Resources Not Affected and Not Considered

Table 4.1 provides an overview of the environmental resources that have been determined to 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
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
Environmental Justice	The population in the project analysis area does not constitute an environmental justice population; therefore, environmental justice is not considered for further analysis. While the median household income is lower in Torrance County ($38,240) than in New Mexico ($51,243), it is higher than the U.S. Census Bureau poverty threshold set for a family of four ($26,246) (U.S. Census Bureau 2020a). In addition, residents living at the poverty level account for approximately 24.1%, which does not meet the Council on Environmental Quality definition of a low-income population (50% or higher designated as below the poverty line). The majority of the population is identified as white alone and there is a lower proportion of Hispanic or Latino populations compared with those of the state (U.S. Census Bureau 2020b).	U.S. Census Bureau 2020a, 2020b

Resource	Reasoning	Source
Floodplains	According to FEMA Flood Insurance Rate Map Panel 3501330013B, dated 10/01/2007, the proposed project area is not within a 100-year floodplain (FEMA 2022b); therefore, floodplains are not considered for further analysis. Due to the lack of floodplains in the project area, the 8-step process for evaluating impacts to floodplains is not included in this EA.	FEMA 2022b
Groundwater	The project area is within the Estancia and Tularosa Basins. The groundwater within the valley-fill aquifer is somewhat brackish. The project area falls within the Aquifer Mapping Program area that is studied by the New Mexico Bureau of Geology and Mineral Resources. However, due to the thickness of the valley-fill material (400 feet thick in some places), it is unlikely that any groundwater resources would be impacted by this project; therefore, it is not considered for further analysis.	New Mexico Bureau of Geology and Mineral Resources 2022
Hazardous Waste	Review of the U.S. Environmental Protection Agency's (EPA's) Environmental Justice Screening and Mapping Tool (EPA 2021a) and of the NEPAssist tool (EPA 2022) showed that there are no hazardous, toxic, or radiological sites within the project area. In addition, there are no underground storage tanks or leaking underground storage tanks within the project area (EPA 2021b). Therefore, hazardous waste is not considered for further analysis.	EPA 2021a, 2021b, 2022
Land Use, Planning, and Recreation	The project area is located entirely on private land. Therefore, it is not open to public recreation activities, but recreation access may be granted by private landowner. Additionally, the project area does not encompass any prime farmland.	N/A
Seismicity	The project area does not encompass a fault line. Additionally, 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.	N/A
Wetlands	The project area does not contain wetlands; therefore, wetlands are not considered for further analysis. The water resources technical memorandum summarizes the methodology and results of field visits conducted on July 9, 2022 (Appendix A). Due to the lack of wetlands in the project area, the 8-step process for evaluating impacts to floodplains is not included in this EA.	Appendix A
Wild and Scenic Rivers	The National Wild and Scenic Rivers System (Public Law 90-542; 16 USC 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; therefore, they are not considered for further analysis.	U.S. Forest Service 2019

4.2 Geology and Soils

Surface geology within the project area includes soil complexes composed of clay, silt, and sand (i.e., loamy soils). These loamy soils comprise between 68% and 94% of the surface in the project area at the five sites. According to the Natural Resources Conservation Service (2013), there are six mapped soil types across the five sites within the project area. These soil types are well-drained, and none are classified as hydric soils. Witt loam, 1 to 6 percent slopes, is the only soil unit classified as Farmland of Statewide Importance and occurs on 19% to 60% of the project area, depending on the site. Table 4.2 describes the composition of soils and rock outcrop within the project area for each site.

Table 4.2. Soils at the Five Sites within the Project Area

Soil Name	Soil Type Symbol	Project Area	
		Acres	Percent
Aceves E			
Wilcoxson clay loam, 2 to 10 percent slopes	Wc	30.8	27.9%
Pinon channery loam, 3 to 20 percent slopes	Px	23.6	21.4%
Laporte-Rock outcrop complex	Lp	6.9	6.3%

Soil Name	Soil Type Symbol	Project Area	
		Acres	Percent
Witt loam, 1 to 6 percent slopes	Wp	18.3	16.6%
Turkeysprings stony loam, 20 to 50 percent slopes	Tn	30.7	27.8%
Aceves W			
Wilcoxson clay loam, 2 to 10 percent slopes	Wc	2.4	9.3%
Witt loam, 1 to 6 percent slopes	Wp	5.6	21.7%
Laporte-Rock outcrop complex	Lp	3.4	13.2%
Turkeysprings stony loam, 20 to 50 percent slopes	Tn	11.5	44.6%
Goat Canyon			
Turkeysprings stony loam, 20 to 50 percent slopes	Tn	11.1	55.5%
Steep rock land	Sm	5.2	26.0%
Witt loam, 1 to 6 percent slopes	Wp	3.8	19.0%
Swenka N			
Witt loam, 1 to 6 percent slopes	Wp	22.9	60.0%
Laporte-Rock outcrop complex	Lp	12.1	31.7%
Turkeysprings stony loam, 20 to 50 percent slopes	Tn	3.1	8.1%
Swenka S			
Laporte-Rock outcrop complex	Lp	12.1	11.6%
Witt loam, 1 to 6 percent slopes	Wp	27.2	26.0%
Turkeysprings stony loam, 20 to 50 percent slopes	Tn	65.1	62.3%

Source: NRCS (2013)

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; therefore, no actions would be taken that directly impact soils or geology in the project area. However, the existing conditions and potential risks to soils and geology from a wildfire event would continue. When soils are burned, their physical and chemical properties (i.e., temperature, moisture, and biotic characteristics) can be compromised, which affects the soil's ability to cycle nutrients. Additionally, the loss of vegetation resulting from wildfires can expose soils to direct rainfall, making them susceptible to an increased rate of erosion post-fire.

4.2.1.2 PROPOSED ACTION ALTERNATIVE

The Proposed Action would not result in any geologic disturbance. There would be temporary disturbance of up to 298 acres of soils under the Proposed Action. The Proposed Action would thin vegetation by cutting trees and removing the understory brush, but the areas would not be entirely cleared of vegetation down to mineral soil. In accordance with the treatment prescriptions, 40 to 60 square feet of basal area would be retained; therefore, the Proposed Action would not result in exposed soils or increased rates of soil erosion.

There may be temporary soil disturbance in the form of compaction and displacement from the use of wheeled equipment (i.e., woodchipper). To minimize these impacts, project conservation measures would be applied, including limiting the movement of wheeled equipment to one path in and out of each project area, and only utilizing wheeled equipment off established roads when soils are dry (Soil-1 and Soil-2

conservation measures, Section 3.2.3). The Proposed Action also includes chipping some of the woody debris and dispersing it on the ground within the unit, which would further help stabilize soils and retain soil moisture (Vegetation-3, Section 3.2.3).

The fire hazard reduction activities would also reduce the potential for the negative effects of a major wildfire on soils if a wildfire occurs. The Proposed Action would reduce the hazards associated with a major wildfire by making a wildfire easier to contain and less likely to turn into a crown fire, potentially protecting more of the existing vegetation and reducing the adverse effects of a major wildfire on soils.

4.3 Visual Resources

Scenery is the valued visual expression (sights) people enjoy within places. Many landscape preference studies have shown striking uniformity in the type and composition of landscapes people find visually appealing. There are four common aspects of visually preferred settings:

- Large trees
- Herbaceous, smooth groundcover
- Open mid-story canopy with high visual penetration
- Vistas with distant views and high topographic relief

In contrast, "landscapes usually considered less visually appealing are wide-open areas with uniform or monotonous vegetation" (Ryan 2005:13). All landscapes have a definable character and those with the greatest variety or diversity have the greatest potential for high scenic value (U.S. Forest Service 1974).

The project area is primarily composed of pinyon pine and juniper forest with a small grassy meadow between tree stands (Figure 4.1). Past and present harvest and grazing, road building, and decades of wildfire suppression have resulted in even-aged, dense forests with closed canopies, limited views, and an overall lack of vegetative diversity. The project area is adjacent to residential homes and ranches, and the proposed thinning of vegetation would be visible from adjacent properties (including residences) (Figures 3.3 and 3.4).

Figure 4.1. Representative view of the project area.

4.3.1 No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area; therefore, no actions would be taken to directly impact visual resources.

4.3.2 Proposed Action Alternative

Under the Proposed Action, visual changes would be apparent during project implementation and for approximately 3 years after the treatments have been completed. People living adjacent to the project area would observe a change in appearance from the removal of underbrush and the openings between trees or wood chips dispersed on the ground. These thinning activities would be noticeable but would not significantly change the overall appearance based on the thinning prescription to selectively thin trees to at least an average of 40–60 square feet of basal area. The visual impacts would be mitigated by the project conservation measures, including retaining trees and snags within the proposed project area.

The Proposed Action would implement treatments to restore the structure and function of forests and watersheds in the project area. Restoration activities would focus on thinning treatments to improve forest health and resiliency by reducing stand density, continuity, and homogeneity (sameness of forest structure and species composition) and to increase heterogeneity (diverse forest structure and species composition). Thinning would extend the depth of view into the forest and create openings. The thinning would allow for larger trees to grow and thrive. Open space would be created, and most residual slash and all equipment would be gone. In the long term, the characteristic landscape would be enhanced, improving visual quality for adjacent residents.

4.4 Traffic and Noise

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 (dB). Audible sounds range from 0 decibels ("threshold of hearing") to about 140 dB (“threshold of pain”) (Occupational Safety and Health Administration 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 dB. Currently, there is minimal traffic within the vicinity of the project area as it occurs on private land and is distant from major roads.

Assessment of noise impacts includes the proximity of the Proposed Action to sensitive receptors. A sensitive receptor is defined as an area of frequent human use that would benefit from a lowered noise level. Typical sensitive receptors include residences, schools, churches, hospitals, and libraries. Sensitive receptors within the project area consist of residential and some institutional uses. Any noise-generating activities in proximity to these uses could have the potential to adversely affect these sensitive receptors.

The Proposed Action would thin vegetation on private lands. Thinning crews would likely travel to and from the project area in pickup trucks, one of which would tow the woodchipper. Access to the project area would use existing paved and dirt roads, and no new roads would be created.

4.4.1 No Action Alternative

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

4.4.2 Proposed Action Alternative

The Proposed Action would increase noise levels within the project area and the immediate vicinity of the work during the implementation phase of the project. Noise from the Proposed Action would result from the chainsaws used to fell trees, the woodchipper, the masticator, and treatment crews driving to and from the project area. 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 area (Occupational Safety and Health Administration 2013).

Figures 3.3. and 3.4 show residential homes within 2 miles of the project area, which are potential noise receptors. The nearest noise receptor is a residence located approximately 200 feet from the proposed action at the Swenka S site. Increases in noise levels would occur during daytime working hours; therefore minimizing impacts of increased noise levels on nearby sensitive receptors (Public-5 conservation measure, Section 3.2.3). To minimize noise disturbance impacts, all equipment and machinery used would meet all applicable local, state, and federal noise control regulations.

4.5 Public Health and Safety

The purpose and need for the project are to improve public health and safety by mitigating the wildfire hazard in the County. The risk of a catastrophic fire in the project area is high because of heavy fuel loading (closely spaced, overgrown trees and shrubs, and dead and downed material) that has accumulated over time. 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 dense vegetation throughout the County has substantially increased concerns regarding the safety of people living in these areas if a catastrophic wildfire were to occur.

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.

4.5.1 No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area; therefore, 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, and homes, 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.

4.5.2 Proposed Action Alternative

Use of chainsaws, hand saws, masticators, and woodchippers during project implementation could result in bodily injury to thinning crew members and hearing impairments from equipment noise at close range. However, the CPSWCD would minimize the potential for accidents and hearing impacts, as well as impacts associated with the misuse of equipment by encouraging crew members to have forest safety certification, or forest safety training (see Public-2 Conservation Measure, Section 3.2.3.5).

Under the Proposed Action, the primary objective is to reduce the hazardous fuel loads to reduce the rate of spread and intensity of a wildfire within the project area. Implementation of the Proposed Action would create a safer environment for firefighters, which could allow them to control the spread of a fire more easily. Thinning vegetation would create a defensible space on private lands adjacent to residential areas. The defensible space would slow the pace at which wildfires spread, limit the amount of fuels and thereby reduce the intensity of the burn, and reduce safety hazards so that wildfires are more manageable for firefighters to suppress. In addition, when wildfires are controlled more quickly, a smaller area is burned, and less sediment and debris may be transported downstream during future precipitation events that could potentially affect water quality. Therefore, there would be beneficial impacts to public health and safety from thinning vegetation in the project area.

4.6 Air Quality and Climate Change

4.6.1 Air Quality

The Clean Air Act (42 USC 7401 et seq.) sets the National Ambient Air Quality Standards for criteria air pollutants. These standards include maximum concentrations of ozone, carbon monoxide, nitrogen

dioxide, sulfur dioxide, lead, particulate matter smaller than 2.5 microns ($PM_{2.5}$), and particulate matter smaller than 10 microns (PM_{10}). The New Mexico Environment Department (NMED) Air Quality Bureau and the U.S. Environmental Protection Agency (EPA) enforce air quality standards. The Proposed Action is located in New Mexico's Northeastern Plains Intrastate Air Quality Control Region (No. 154), which encompasses all of Colfax, Guadalupe, Harding, Mora, San Miguel, Torrance, and Union Counties. Based on these current federal and state air quality standards, the project area is considered in attainment (EPA 2015).

Smoke is a mixture of fine particulates and gases, and it contains a wide range of pollutants, which can remain suspended in the atmosphere anywhere from a few seconds to several months. The pollutants in the greatest amount produced during combustion of organic material, such as would be found in smoke from a wildfire, include carbon dioxide (CO_2), particulate matter, nitrogen oxides, and hydrocarbons. Lead, sulfur dioxide, and other compounds, including toxics and carcinogens, are also contained in wood smoke but in such small amounts that they are less of a concern in terms of their effect on human health than particulate matter.

While many of these pollutants, as well as some toxic pollutants, are present in smoke from wildland fire, $PM_{2.5}$ is the pollutant of greatest concern and is the most likely to result in public health impacts. $PM_{2.5}$ has an aerodynamic diameter of 2.5 microns or less and can become imbedded deep in the lungs. $PM_{2.5}$ is a major component of smoke and is produced in large quantities in both prescribed fire and wildfires. It also has the ability to be dispersed great distances due to its small size, which enables particulates to stay aloft in the atmosphere over long distances.

4.6.2 No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area; therefore, no long-term impacts to air quality would occur because there would be no actions taken to reduce the risk of high-intensity wildfires within the project area. If the vegetation treatments do 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.

4.6.3 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 chainsaws, masticators, woodchippers, and trucks with trailers to haul equipment and debris. This equipment would burn hydrocarbon fuels including nitrogen dioxide and sulfur dioxide, which are criteria pollutants and would result in a temporary incremental increase in greenhouse gas emissions. These emissions would be intermittent and temporary, lasting for the duration of equipment use. Emissions from the use of mechanical equipment would be small, relative to the emissions generated by wildfire events. Emissions of other criteria pollutants resulting from the Proposed Action are not expected to exceed state or federal air quality standards. In order to mitigate impacts, all machinery and vehicles used in project implementation would be properly maintained and stored to limit the amount of greenhouse gases that are emitted (Air-2 Conservation Measure, Section 3.2.3.2).

By implementing the Proposed Action, hazardous fuel loading in the project area would be mitigated, reducing the potential for a large catastrophic wildfire. The Proposed Action would also result in reduced risk of wildfire-related smoke impacts on air quality for nearby communities.

4.6.4 Climate Change

Climate in the project area is defined as cold semi-arid climate (type "BSk") under the Köppen-Geiger climate classification, consisting of cold, semi-arid steppe climate conditions (Rubel and Kottek 2010). The average annual high temperature is 67.4°F (19.7°C), and the average annual minimum temperature is 35.6°F (2°C) (Mountainair Station 295965) (Western Regional Climate Center 2022). Average annual precipitation is 14.4 inches (366 mm), with the majority of the precipitation occurring during monsoon summer rainfall events.

The North American monsoon is associated with moist air transported from the Pacific Ocean, the Gulf of California, and the Gulf of Mexico into the southwestern United States, generally resulting in brief and torrential precipitation events during the summer months (National Weather Service 2021). The summer monsoon contributes a large proportion of annual precipitation. Secondary precipitation accumulations occur during winter when moisture from the Pacific Ocean moves eastward and brings frontal storms.

Warming temperatures have already produced observable changes in the hydrologic cycle and sea level. Climate change models predict a general warming and drying over the southwestern United States (Maurer et al. 2007). Increased temperatures have been associated with reduced snowpack and increased snowline elevation, as well as higher proportion of rainfall to snowfall (U.S. Bureau of Reclamation 2016). Regional trends indicate changes in temperature and precipitation patterns, with a trend toward the southwestern United States becoming drier. Precipitation events are anticipated to be more torrential, with precipitation converting to less frequent but more intense events (Karl 2009), which would increase the potential and severity of flooding events.

Increased temperatures with decreased precipitation within the Estancia Basin are expected to exacerbate water supply constraints and shortages and to increase the potential for severe droughts (U.S. Bureau of Reclamation 2011). Declines in snowpack, runoff, and recharge are expected to decrease surface-water quality (Dunbar et al. 2021). Higher temperatures and greater aridity are likely to stress plant communities, which may increase erosion and the frequency of more extreme wildfires. Warming could also increase reservoir and stream evaporation, and indirectly increase runoff effects from ecosystem changes (e.g., pine beetle infestation). These changes in water supply and precipitation patterns are expected to alter species distribution by reducing the extent of suitable habitat or shifting habitat distributions north or to higher elevation (Friggens and Finch 2015).

4.6.4.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, an increase in fire risk is expected. Catastrophic fires release CO_2 to the atmosphere, which is known to be a greenhouse gas that would in turn contribute to global warming. The loss of the forested habitat would also result in the loss of a potential carbon sink. Current climate change projections indicate increasing aridity in the southwestern United States. Because climate change is unpredictable with unknown direct effects, no evidence currently exists to suggest a change in the current trend toward a forest ecosystem of declining quality. The No Action Alternative would likely result in long-term adverse effects to climate.

4.6.4.2 PROPOSED ACTION

The Proposed Action is not anticipated to affect global climate change. CO_2 emissions from equipment and vehicles necessary to implement the wildfire mitigation activities would contribute very small, insignificant temporary contributions to climate change. The Proposed Action would be expected to have a beneficial long-term impact on climate change by reducing the potential emission of greenhouse gases associated with a major wildfire. Restoration activities under the Proposed Action would improve

ecosystem function by creating a more natural vegetation composition and reduce the risk of fire. Intact forests can serve as carbon sinks removing CO_2, a greenhouse gas, from the atmosphere (Bellassen and Luyssaert 2014; Ryan et al. 2012). The conservation measures would mitigate the potential for these impacts by ensuring that all machinery and vehicles used in project implementation be properly maintained and stored to limit the amount of greenhouse gases that are emitted. (Air-2 Conservation Measure, Section 3.2.3).

4.7 Water Resources – Water Quality

The entire project area is located within the Estancia Basin. The Aceves and Swenka sites are within the Torreon Draw watershed (U.S. Geological Survey [USGS] Hydrologic Unit Code [HUC] 1305000111), and the Goat Canyon site is within the Abo Arroyo (USGS HUC 14012) and Chavez Draw watersheds (USGS HUC 14902). The Aceves project area is located along Arroyo Chinchonte, an intermittent stream that is used for agricultural irrigation and drains into the closed Estancia Basin. Surface water in the project area occurs primarily as short-lived and intermittent stream flows (Appendix A).

The NMED is the regulatory agency responsible for compliance with water quality standards in New Mexico. The NMED's 2016 Integrated Report for Clean Water Act 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). However, the Arroyo Chinchonte is not listed on the State's 303(d) list. Additionally, the Estancia Basin is closed; therefore, there are no navigable outlets for the water and the water features within the Estancia Basin are not within U.S. Army Corps of Engineers' jurisdiction.

4.7.1.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area; therefore, no actions would be taken to directly impact water quality. However, the existing conditions and potential risks to water quality from a wildfire event would remain. Risks associated with wildfire include the build-up of ash and fire debris in water resources, and increased soil erosion.

4.7.1.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, there is very little risk or potential for tree thinning actions to impact water quality. Forest thinning activities have the potential to cause erosion and sedimentation in areas where soils are physically disturbed. Where trees and brush are cut by hand, human footsteps can dislodge soil particles, especially on steep slopes. Trees and brush dragged across a hillslope can furrow the soil, making it more susceptible to erosion. However, hand thinning is unlikely to cause additional erosion, even if a very wet climate were to occur the year following treatment.

The operation of equipment during the Proposed Action would disturb soils, which could increase erosion potential during heavy rains. Heavy equipment, such as masticators (fuels reduction) and utility terrain vehicles (transportation) would result in compacted soil, which increases soil density (Greacen and Sands 1980; Hatchett et al. 2006). Water is less able to infiltrate denser soil, resulting in increased overland flow and subsequent erosion (Greacen and Sands 1980).

Potential impacts could also 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 (Water-3 Conservation Measure, Section 3.2.3). 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. Conservation measures described in Section 3.2.3 (Soil-1 and Soil-2, and Water-1 through Water-3) would be implemented to minimize impacts to water quality.

According to Section 402(l)(3) of the Clean Water Act, silvicultural activities, such as thinning, site preparation, reforestation, or pest and fire control, do not require a permit. Therefore, a stormwater pollution prevention plan is not required for project implementation.

4.8 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 federally listed and state-listed species. SWCA conducted a pedestrian natural resources survey of the project area on May 19 and 20 and July 8, 2022, to document vegetation communities, identify the potential for special-status species and habitat communities regulated by the USFWS under Section 7 of ESA, and identify active and inactive migratory bird nests protected by the MBTA. Section 7 of the ESA of 1973 (16 USC § 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. The MBTA (16 USC §§ 703–711) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations.

4.8.1 Vegetation

The project area is located within two EPA ecoregions: the Conifer Woodlands and Savannas Level IV ecoregion within the Arizona/New Mexico Mountains Level III ecoregion and the Pinyon-Juniper Woodlands and Savannas Level IV ecoregion within the Southwestern Tablelands Level III ecoregion (Griffith et al. 2006). The Swenka project area and Aceves project area occur within the Conifer Woodlands and Savannas ecoregion. The Goat Canyon project area is located within the Pinyon-Juniper Woodlands and Savannas ecoregion.

The Conifer Woodlands and Savannas Level IV ecoregion is characterized by mostly pinyon-juniper woodlands with some ponderosa pine at higher elevations with interspersed grasslands or shrublands. This region is generally cool with more uniform winter and summer seasonal moisture. The Pinyon-Juniper Woodlands and Savannas is characterized by scattered, dissected areas of pinyon and juniper woodlands on uplands in the state. This region is typically associated with thin soils derived from limestone, sandstone, and shale with rock outcrops common throughout. This ecoregion is further removed from mountain topography than the Conifer Woodlands and Savannas Level IV ecoregion, which leads to differences in the precipitation rate, soil composition, and understory vegetation between the two ecoregions.

The project area is primarily composed of pinyon pine, oneseed juniper (*Juniperus monosperma*), blue grama (*Bouteloua gracilis*) and western wheatgrass (*Agropyron smithii*) (Table 4.3). None of these species are considered to be special-status species. No State of New Mexico noxious weeds were identified during the natural resources survey.

Vegetation is dense in the majority of 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 with widespread mortality and are much more intense that the typical fire regime of the area. Mitigating the wildfire risk on these forested lands is especially needed because they are a threat to adjacent residential areas and population centers.

Table 4.3. Vegetation Species Observed within the Proposed Treatment Area

Common Name	Scientific Name
Alligator juniper	*Juniperus deppeana*
Annual buckwheat	*Eriogonum annuum*
Banana yucca	*Yucca baccata*
Beardlip penstemon	*Penstemon barbatus*
Big bluestem	*Andropogon gerardii*
Blue grama	*Bouteloua gracilis*
Canada wildrye	*Elymus canadensis*
Club cholla	*Grusonia clavata*
Common mullein	*Verbascum thapsus*
Copper globemallow	*Sphaeralcea angustifolia*
Daisy fleabane	*Erigeron strigosus*
Foxtail barley*	*Hordeum jubatum*
Fremont's geranium	*Geranium caespitosum*
Gambel oak	*Quercus gambelii*
Goat's beard	*Tragopogon dubius*
Gray oak	*Quercus grisea*
Hedgehog pricklypoppy	*Argemone squarrosa*
Ivyleaf groundcherry	*Physalis hederifolia*
James' beardtongue	*Penstemon jamesii*
James' galleta	*Pleuraphis jamesii*
Kochia*	*Kochia scoparia*
MacDougal verbena	*Verbena macdougalii*
Mountain ball cactus	*Pediocactus simpsonii*
Mountain mahogany	*Cercocarpus montanus*
Mountain muhly	*Muhlenbergia montana*
Muttongrass	*Poa fendleriana*
Narrowleaf goosefoot	*Chenopodium leptophyllum*
Needle grama	*Bouteloua aristidoides*
New Mexico thistle	*Cirsium neomexicanum*
Northwestern Indian paintbrush	*Castilleja chromosa*
Nylon hedgehog cactus	*Echinocereus viridiflorus*
Oneseed juniper	*Juniperus monosperma*
Pinesap	*Monotropa hypopithys*
Pinyon pine	*Pinus edulis*
Plains pricklypear	*Opuntia polyacantha*
Prostrate pigweed	*Amaranthus albus*
Rocky Mountain juniper	*Juniperus scopulorum*
Sand dropseed	*Sporobolus cryptandrus*

Common Name	Scientific Name
Shortawn foxtail	*Alopecurus aequalis*
Sideoats grama	*Bouteloua curtipendula*
Silverleaf nightshade	*Solanum elaeagnifolium*
Skunkbush sumac	*Rhus trilobata*
Slender buckwheat	*Eriogonum microthecum*
Sonoran scrub oak	*Quercus turbinella*
Spreading fleabane	*Erigeron divergens*
Trailing fleabane	*Erigeron flagellaris*
Tree cholla	*Cylindropuntia imbricata*
Tulip pricklypear	*Opuntia phaeacantha*
Twistspine pricklypear	*Opuntia macrorhiza*
Weeping lovegrass	*Eragrostis curvula*
Western wheatgrass	*Agropyron smithii*
Wholeleaf Indian paintbrush	*Castilleja integra*

*Indicates a non-native species that is not listed as a State of New Mexico Class A, B, or C listed noxious species.

4.8.1.1 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. Management of native woodlands and forests would not occur.

Adjacent residences, businesses, and community areas would continue to be at risk from fuel loads on forested lands, and 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.

4.8.1.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, vegetation on 298 acres of private lands would be thinned using the prescription parameters detailed in Sections 3.2.1 and 3.2.2 and would have the potential to be impacted. Adverse impacts associated with the Proposed Action include the loss of small-diameter trees and shrubs, ground disturbance that could impact established grasses and forbs, and the potential to introduce invasive species to the treatment area. As stated in Section 3.2.3 (Project Conservation Measures), chipped materials from thinning will be spread evenly throughout the treatment area with an average depth of 2 inches (no greater than 6 inches) to allow for grasses and other ground vegetation to grow up through the shredded woody material and help retain ground moisture. This would help reduce the impacts resulting from ground disturbance and tree removal and will help aid vegetation reestablishment of the area.

Mechanical treatments that promote the growth of desirable species through modifying plant species composition, would increase plant species diversity in both the overstory and understory, increase structural diversity, and improve resilience of vegetation to insects, disease, and wildfire, thereby improving ecological function and resiliency of the existing woodland and forest ecosystem. Achieving any of these conditions would result in short-term (one to two growing seasons) and long-term (decades) beneficial impacts as desired conditions are met.

The risk of invasive species introduction and establishment in the project area would be minimal. There are currently no invasive species present within the project area (Table 4.3). As stated in Section 3.2.3 (Project Conservation Measures), vehicles and equipment would be cleaned of soil and debris capable of transporting invasive species seeds before entering the project area to reduce the risk of invasive species introduction.

4.8.2 Threatened and Endangered Species and Critical Habitat

Section 7 of the ESA of 1973 (16 USC § 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. Based on a review of the Information for Planning and Consultation system and the Biota Information System of New Mexico (BISON-M), there are eight federally listed or state-listed species special-status species that have the potential to occur (USFWS 2022a, BISON-M 2022). The project area is not within any designated or proposed USFWS critical habitat. After evaluating habitat characteristics in the project area, it was determined that one federal candidate species has potential habitat and thus may occur in the project area, the monarch butterfly (*Danaus plexippus*).

Table 4.4 provides an evaluation for all eight federally listed and state-listed species within the proposed project area. This table includes rationale for whether the species would likely occupy the project area. No special-status species were observed during the survey.

Table 4.4. Federally Listed and State-Listed Special-Status Species for the Proposed Project in Torrance County, New Mexico

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
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 wetlands.	No effect.
Baird's sparrow (*Ammodramus bairdii*)	State T	This species is a winter resident in New Mexico. It has been found on Otero Mesa and in the Animas Valley and may occur in other areas of suitable winter habitat, particularly in the southeast portion of the state. Generally prefers dense, extensive grasslands with few shrubs. Avoids heavily grazed areas.	**Unlikely to occur** in the project area due to lack of extensive grasslands.	No 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 prey bases, including prairie dog colonies.	No effect.

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
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. Habitat for the species occurs approximately 2 miles (3.2 km) to the west within the Manzano mountain range (USFWS 2022b).	**Unlikely to occur**. The proposed project area is proximal to habitat for this species. However, the proposed project area is composed of pinyon-juniper woodland and not the species' preferred conifer habitat, does not contain steep mountain walls, and thus is unlikely to provide suitable nesting habitat for owls.	No effect.
Monarch butterfly (*Danaus plexippus*)	USFWS C	This species is a seasonal resident occurring in all counties in New Mexico. The species' migration route is influenced by the presence of milkweed (*Asclepias* sp.) habitat.	**May occur** in the proposed project area during migration from April through October.	Potential impact to migration habitat. See discussion that follows this table.
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** in the project area due to lack of suitable habitat of riparian area with preferred vegetation.	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 of riparian area with preferred vegetation.	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 of riparian area with preferred vegetation.	No effect.

Except where otherwise noted, range or habitat information for wildlife species is taken from the BISON-M website (BISON-M 2022), the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2022a), Cartron (2010), and the New Mexico Rare Plant Technical Council (1999).

U.S. Fish and Wildlife Service (USFWS): E = Endangered. T = Threatened. w/CH = with Critical Habitat. Source: USFWS (2019a).

State E = Endangered. State T = Threatened.

4.8.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area; therefore, there would be no direct impacts to special-status species or their habitat because the project would not be implemented.

4.8.2.2 PROPOSED ACTION ALTERNATIVE

Up to 298 acres of special-status species habitat would be temporarily disturbed under the Proposed Action. The Proposed Action would reduce fuel loads, remove ladder fuels, 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 and habitat conditions for special-status species.

It has been determined that no effect would occur to four federally listed and three state-listed threatened or endangered species within Torrance County as they are unlikely to occur within the proposed project area (see Table 4.4). However, should special-status species occur as migrant or transient individuals through the project area, the Proposed Action would have short-term, adverse effects due to vegetation thinning activities and the presence of humans and equipment. These impacts would be mitigated for bird species through the application of conservation measure Bird-1. The Proposed Action would have long-term beneficial impacts on special-status habitat by reducing the possibility of extensive wildlife habitat loss in the project vicinity that may occur as a result of wildfire.

Monarch butterfly

The monarch butterfly is designated as a federal candidate species but does not receive statutory protection under the ESA. This species is known to occur throughout New Mexico during seasonal migration and the breeding season and the warmer months of April to October but is not known to overwinter within the state (Cary and DeLay 2016). Monarch butterflies use milkweed (*Asclepias* sp.) habitat for breeding, and milkweed is the sole source of food for this species during the caterpillar phase of life.

The species was not observed during the May and July 2022 biological surveys of the proposed project area. SWCA did not observe any milkweed vegetation suitable for monarch butterfly breeding within the project area. Although no milkweed plant species necessary for breeding were found during the May and July 2022 biological surveys, flowering plants that could provide forage for migrating monarch butterflies may occur seasonally within the project area. Vegetation removal involved with the project is not anticipated to cause mortality or other indirect impacts to monarch butterflies since many of the plant species being targeted for removal are trees and do not provide forage or breeding substrate for monarch butterfly adults and caterpillars. Potential impacts to the milkweed species include trampling. Therefore, temporary impacts to monarch butterfly habitat are anticipated. The proposed project could impact monarch butterfly habitat but would not likely contribute to a trend toward federal listing or cause a loss of population or species viability. Consultation with USFWS is not required under Section of the ESA for candidate species.

4.8.3 Wildlife, Including Migratory Birds and Bald and Golden Eagles

The Arizona/New Mexico Mountains–Conifer Woodlands and Savannas 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 highways, and thus wildlife species present would be influenced by residential activities and vehicle traffic. SWCA biologists detected 26 bird species and five mammals during the May and July 2022 surveys of the project area (Table 4.5).

The MBTA (16 USC §§ 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 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) above mean sea level 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 (*Cynomys sp.*). Golden eagles feed mainly on small mammals, as well as invertebrates, carrion, and other wildlife (BISON-M 2022).

In addition to recording wildlife and plants observed during the surveys, SWCA evaluated habitat for the possible occurrence of active and inactive bird nests. In total, 26 bird species and no inactive or active nests were observed during SWCA's natural resources field survey (see Table 4.5). Most of the species observed during SWCA's survey occur in New Mexico during the breeding season and may nest in trees or in shrubs documented in the project area.

Table 4.5. Wildlife Detected during Biological Surveys

Common Name	Scientific Name
Birds	
American robin	*Turdus migratorius*
Ash-throated flycatcher	*Myiarchus cinerascens*
Black-headed grosbeak	*Pheucticus melanocephalus*
Broad-tailed hummingbird	*Selasphorus platycercus*
Bushtit	*Psaltriparus minimus*
Chipping sparrow	*Spizella passerina*
Common raven	*Corvus corax*
Gray vireo	*Vireo vicinior*
Juniper titmouse	*Baeolophus ridgwayi*
Ladder-backed woodpecker	*Dryobates scalaris*
Merriam's turkey	*Meleagris gallopavo merriami*
Mountain chickadee	*Poecile gambeli*
Mourning dove	*Zenaida macroura*
Northern flicker	*Colaptes auratus*
Northern mockingbird	*Mimus polyglottos*
Plumbeous vireo	*Vireo plumbeus*
Red-tailed hawk	*Buteo jamaicensis*
Rufous hummingbird	*Selasphorus rufus*
Say's phoebe	*Sayornis saya*
Spotted towhee	*Pipilo maculatus*
Steller's jay	*Cyanocitta stelleri*
Turkey vulture	*Cathartes aura*
Western bluebird	*Sialia mexicana*
Western scrub jay	*Aphelocoma californica*
White-breasted nuthatch	*Sitta carolinensis*
Yellow-rumped warbler	*Setophaga coronata*
Mammals	
Coyote*†	*Canis latrans*
Mule deer	*Odocoileus hemionus*

Common Name	Scientific Name
Pocket gopher*†	*Thomomys* sp.
Rock squirrel	*Spermophilus variegatus*
Wood rat	*Neotoma* sp.

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

* detected via tracks and/or scats

† detected via mounds and/or nests

4.8.3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area; therefore, 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 disturbance and displacement, injury, or mortality.

4.8.3.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, up to 298 acres of wildlife habitat, including migratory bird habitat, would be temporarily disturbed. Wildlife would be temporarily displaced by the physical presence of thinning activities in the area, including noise from chainsaws and woodchippers, 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. Most wildlife species can move away from treatment activities; therefore, direct injury or mortality of wildlife during commencement of vegetation removal is not anticipated.

It is the CPSWCD's goal to cause minimal disruption to all wildlife in the project area, including migratory birds, when conducting thinning treatments. However, due to the treatment time frame for implementing the project (per the grant agreement), as well as other project constraints such as weather and safe working conditions, vegetation removal would occur within a year of the grant being issued. As stated in Section 3.2.3 (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 (Bird-1). 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 adversely affect 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 catastrophic wildfire.

4.9 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.

4.9.1 Historic Properties

Section 106 of the National Historic Preservation Act (NHPA) requires that activities occurring on federal land, or those actions that require federal permits or use federal funds, undergo a review process to

consider historic properties that are or may be eligible for listing in the National Register of Historic Places (NRHP). For historic properties listed or eligible for listing in the NRHP, the federal agency must review the effects of it action, called an "undertaking," on the historic properties. If there is potential for the undertaking to affect the historic property, particularly adversely, the agency must consider alternatives and measures to avoid, minimize or mitigate the effect. 36 C.F.R. Part 800. Using the New Mexico Cultural Resource Information System (NMCRIS), the online Archeological Resources Management System (ARMS) database, database records were searched for previously recorded archaeological sites and previously conducted archaeological surveys within 500 m (0.3 mile) of the project area. The New Mexico Historic Preservation Division and NRHP records searches were concurrently conducted for properties listed in the NRHP and the State Register of Cultural Properties. The search indicated that five previous cultural resources surveys and two previous cultural sites have been recorded within 500 m (0.3 mile) of the project area. None of the previous resource surveys overlapped with the current project area. Only one previously recorded site discovered and recorded in 2019, LA 194426, falls within the project area.

SWCA conducted a 100 percent (intensive) cultural resources pedestrian inventory on nonconsecutive days between April 15 and June 10, 2022. SWCA's intensive cultural resources inventory resulted in 55 isolated occurrences and 16 newly encountered archaeological sites, and one previously recorded archaeological site was revisited (LA 194426) (Weldy 2022). Prehistoric and historic materials were observed in both the isolated occurrences and sites recorded. Isolated occurrences are by definition not eligible for listing in the NRHP.

Table 4.6 summarizes the sites and provides eligibility and management recommendations.

Table 4.6. Site Summary and NRHP Eligibility

Resource No.	Site Type/Occupation Type	Eligibility Recommendation
LA 201082	Artifact scatter / Prehistoric	Not Eligible
LA 201083	Artifact scatter / Historic to Recent	Not Eligible
LA 201084	Artifact scatter / Prehistoric	Not Eligible
LA 201085	Artifact scatter / Prehistoric	Not Eligible
LA 201086	Artifact scatter / Prehistoric	Eligible, Criterion D
LA 201087	Artifact scatter / Prehistoric	Not Eligible
LA 201088	Artifact scatter with features / Prehistoric and Historic	Eligible, Criterion D
LA 201089	Artifact scatter with features / Prehistoric and Recent	Eligible, Criterion D
LA 201090	Artifact scatter with features / Prehistoric	Eligible, Criterion D
LA 201091	Artifact scatter / Prehistoric	Not Eligible
LA 201092	Artifact scatter / Prehistoric	Not Eligible
LA 194426	Artifact scatter with features / Historic	Eligible, Criterion D
LA 201093	Artifact scatter / Historic	Not Eligible
LA 201094	Artifact scatter / Prehistoric	Not Eligible
LA 201095	Artifact scatter / Prehistoric and Historic	Not Eligible
LA 201096	Artifact scatter / Prehistoric	Not Eligible
LA 201097	Artifact scatter / Prehistoric	Eligible, Criterion D

4.9.2 American Indian/Native

The NHPA requires that federal agencies consult with tribal groups with a designated 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 within the formal government-to-government consultation process:

- Comanche Nation
- Hopi Tribe of Arizona
- Jicarilla Apache Nation
- Kiowa Tribe
- Mescalero Apache Tribe
- Navajo Nation
- Pueblo of Isleta
- Pueblo of Tesuque

4.9.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to reduce fuel loads in the project area; therefore, 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.

4.9.2.2 PROPOSED ACTION ALTERNATIVE

As part of the Section 106 formal government-to-government consultation process, FEMA submitted the cultural resources survey report (Weldy, 2022) to the SHPO on August 18, 2022, and eight tribes listed above on August 23, 2022. See Appendix C for consultation correspondence with tribes and the SHPO.

During the 30-day formal comment period, FEMA received a response from SHPO, dated August 29, 2022, that indicated a lack of SHPO concurrence for the determinations of eligibility for seven sites. FEMA sent a follow up letter to SHPO explaining the avoidance and minimization measures that would be taken to avoid adverse effects to historic properties on August 30, 2022. SHPO did not respond within the 30 days outlined in the Programmatic Agreement between SHPO, FEMA, and NMDHSEM, therefore FEMA assumed concurrence with the effect determination and proposed avoidance and minimization measures presented in the August 30, 2022, letter. Subject to agency consultation and comment, FEMA has determined that the proposed undertaking would have no adverse effect to historic properties. RPMs described in Section 3.2.3 (Cultural-1 through Cultural-3) would be implemented to a avoid impacts to cultural resources.

Seventeen cultural sites were recorded during the cultural resources pedestrian inventory; all 17 sites could potentially be impacted under the Proposed Action. Potential impacts to the sites include surface artifacts becoming covered by wood chips and the surface distribution of artifacts shifting.

For the six sites recommended as eligible for listing in the NHRP under Criterion D and for the 7 sites with undetermined eligibility, vegetation within the site boundaries would be subjected to hand and

mechanical treatments only, with no use of heavy equipment. Thinned vegetation would be removed by hand and chipped outside the site boundary. Adherence to management recommendations would ensure that the proposed action would not adversely affect any cultural historic properties in the project area.

The use of heavy machinery or vehicles within site boundaries could disturb subsurface cultural deposits (if present). The methods used to implement the Proposed Action and conservation measures outlined in Section 3.2.3 (including site specific management recommendations and measures that would halt all actions in the event of a discovery during implementation), would mitigate potential impacts to cultural deposits.

Consultation with the Comanche Nation, Hopi Tribe of Arizona, Jicarilla Apache Nation, Kiowa Tribe, Mescalero Apache Tribe, Navajo Nation, Pueblo of Isleta, and Pueblo of Tesuque was conducted per 36 CFR § 800.2(c)(2)(i)(B), dated August 23, 2022. The tribes did not provide comments within 30 days or declined to comment. FEMA has determined that proposed project will not adversely affect traditional, religious, or culturally significant sites.

5 SUMMARY TABLE

Table 5.1 summarizes the impacts described in EA Chapter 4, the applicable treatment prescription element found in Section 3.2.2 and the applicable conservation measure(s) found in Section 3.2.3.

Table 5.1. Summary of Impacts and Mitigation

Affected Environment/ Resource Area	Impacts	Agency Coordination/Permits	Treatment Prescription/Project Conservation Measures
Geology and Soils	Soil compaction from wood chipper; soil erosion from vegetation removal.	No/No	Soil-1 and Soil-2
Visual Resources	Change in appearance of project area treated, reduced visual barrier between residences and open space areas.	No/No	Treatment prescription element 2, 4
Traffic and Noise	Noise from chainsaws and wood chipper.	No/No	Public-5
Public Health and Safety	Injury from accidents associated with equipment use, disturbance to nearby residential areas and community centers, and impacts associated with reduction in wildfire risk.	No/No	Public-1 through Public-4
Air Quality and Climate Change	Greenhouse gas emissions from burning hydrocarbon fuels associated with the use of vehicles, chainsaws, and the wood chipper.	No/No	Air-1 and Air-2
Water Quality	None	No/No	Water-1 through Water-3
Vegetation	Minimal potential for introduction of non-native species.	No/No	Vegetation-1 and Vegetation-2 Treatment prescription: 6
Threatened and Endangered Species and Critical Habitat	No effect to threatened or endangered species or critical habitats.	No/No	Bird-1 and Bird-2
Wildlife	Impacts to habitat, nesting birds, displacement of wildlife, and long-term improvements to habitat conditions	New Mexico Department of Game and Fish notified	Bird-1 and Bird-2
Historic Properties	No adverse effect to historic properties.	Consultation with SHPO	Cultural-1, Cultural-2

Affected Environment/ Resource Area	Impacts	Agency Coordination/Permits	Treatment Prescription/Project Conservation Measures
American Indian/Native	No impacts to tribal resources or areas sensitive to tribal groups have been identified.	FEMA consultation with tribes	Cultural-2

6 CUMULATIVE IMPACTS

Cumulative impacts are impacts to the environment that 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. Torrance County was chosen for the cumulative geographic scope for cumulative analysis. Past and foreseeable projects within the County, including lands managed by the County and private lands considered in this analysis, include the following:

- Developments (such as clearing lands to construct buildings for residential and expanding utilities, roads, renewable energy development, and trails). While private development activities would 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.
- Vegetation management activities including vegetation thinning, prescribed burning, and invasive species treatments.

6.1 Geology and Soils

Cumulative impacts to soils 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 within local drainages would be expected, especially when high-intensity storm events occur during construction of the future actions. The implementation and maintenance of stormwater pollution prevent measures could mitigate the adverse effects of soil erosion and sedimentation, if installed.

6.2 Visual Resources

Vegetation treatments throughout the County would be noticeable in the short term (lasting up to 3 years). However, the long-term visual impacts would result in healthier vegetation conditions that sustain visual resources and desired vistas. Visual impacts from residential and business developments throughout the County would likely be considered adverse to most viewers due to the rural nature of the project area. However, these developments would be in compliance with County building code standards and within areas zoned for development. Therefore, cumulative impacts to visual resources would be long-term and both adverse and beneficial.

6.3 Traffic and Noise

Noise from development and vegetation management activities can disturb both humans and wildlife, contributing to cumulative adverse impacts in the short and long term. 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.

6.4 Public Health and Safety

The purpose and need for the project are to improve public health and safety by mitigating the wildfire hazard in the project area in and on adjacent lands. The project would thin vegetation to reduce the risk of wildfire and to mitigate impacts to infrastructure, 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. The dense vegetation in the project area has substantially increased concerns regarding the safety of people adjacent to the project area if a wildfire were to occur. Cumulative impacts of vegetation management activities would have beneficial impacts on public health and safety when added to the impacts of the Proposed Action.

6.5 Air Quality and Climate Change

Recent past, ongoing, and planned fuel reduction projects would continue to occur on adjacent federal, state, and private lands within the analysis area. These would have cumulative impacts on air quality, including long-term increased ecosystem resilience in the analysis area (beneficial impact) and short-term smoke impacts from prescribed burns (adverse impact). Mechanical treatments and other restoration activities on adjacent lands would further increase long-term air quality benefits as a result of reduced risk of wildfire as well as improved forest health, which could improve the project area's resiliency in a changing climate.

6.6 Water Resources

Cumulative impacts to drainages 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 within local drainages from overland flow would be expected, especially when high-intensity storm events occur during construction of the future actions. The implementation and maintenance of stormwater pollution prevention measures could mitigate the adverse effects of soil erosion and sedimentation to water resources, if installed.

6.7 Biological Resources

Recent past, ongoing, and planned vegetation management projects would continue to occur on adjacent federal, state, and private lands surrounding the project area. These would have cumulative short-term adverse and long-term beneficial impacts on biological communities. Short-term adverse impacts include temporary, localized removal or disturbance of vegetation and wildlife habitat as a result of vegetation thinning treatments, prescribed fire, and herbicide application, and potential for indirect adverse impacts, including temporary damage to soil substrates that impact growing conditions and increased vulnerability to non-native vegetation species resulting from disturbance. 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 reduces the availability of large, continuous habitat patches, which can lead to displacement and physiological stress in wildlife species. Therefore, the Proposed Action would result in short- and long-term impacts to biological resources, which would be both beneficial (wildfire risk reduction) and adverse (reduced vegetation and habitat availability) in nature.

6.8 Cultural Resources

When considering past, present, and foreseeable future actions, the Proposed Action has the potential to increase the amount of ground-disturbing activities within portions of Torrance County. Project conservation measures would be implemented to keep ground-disturbing activities out of properties listed or eligible for listing in the NRHP (Cultural-1 and Cultural-2). Because of this, the potential cumulative effects on cultural resources are not considered to be adverse.

Federal- and state-level present and reasonably foreseeable future projects within the analysis area would comply with either Section 106 of the NHPA or the New Mexico laws protecting cultural resources (Cultural Resources Act, New Mexico Statutes Annotated 18-6-1-17 and Cultural Properties Protection Act, New Mexico Statutes Annotated 18-6A-1-6). Through these processes, impacts to cultural resources would either be avoided or mitigated.

6.9 Summary of Cumulative Impacts

Overall, the cumulative impacts of actions throughout the County when added to the impacts of the Proposed Action on the project area would not have adverse impacts for soils, visual resources, traffic and noise, water, vegetation, wildlife, and cultural resources for the duration of project implementation, and beneficial impacts on soils, public health and safety, air, water, vegetation, wildlife, and cultural resources for many years post-treatment as a result of improved ecosystem functioning and resiliency and reduced potential for severe wildfire and unwanted fire effects.

7 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

FEMA is the lead federal agency for conducting the NEPA compliance process for the proposed 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. This section provides a summary of the agency coordination efforts and public involvement process for the proposed project.

7.1 Agency Coordination

The Proposed Action has been coordinated with FEMA Region 6, NMDHSEM, the U.S. Forest Service Mountainair Ranger District, USFWS, New Mexico Department of Game and Fish, New Mexico Historic Preservation Division (SHPO), NMED, New Mexico State Forestry Division, EPA, Chilili Land Grant, Tajique Land Grant, Manzano Land Grant, Deer Canyon Preserve Homeowners Association, and Torrance County. Coordination for the Proposed Action was conducted with staff from these agencies throughout the EA development process.

Scoping letters were sent to stakeholder agencies listed in the paragraph above on June 17, 2022 (Appendix B). No scoping comments were received.

7.2 National Historic Preservation Act Section 106 Consultation

FEMA submitted the cultural resources survey report (Weldy 2022) to SHPO on August 18, 2022, and the eight tribes listed in Section 4.9.2 on August 23, 2022. See Appendix C for detailed consultation correspondence with tribes and the SHPO.

Section 106 of the NHPA requires that activities occurring on federal land, or those actions 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 NRHP. Using the NMCRIS online ARMS database, New Mexico Historic Preservation Division, and NRHP records, five previous cultural resources surveys and two previous cultural sites have been recorded within 500 m (0.3 mile) of the project area. None of the previous resource surveys overlapped with the current project area; therefore, SWCA conducted a 100 percent (intensive) cultural resources pedestrian inventory on nonconsecutive days between April 15 and June 10, 2022.Only one previously recorded site, LA 194426, falls within the project area and was revisited during the current investigation. 55 isolated occurrences and 16 newly encountered archaeological sites were discovered and recorded within the project area.

FEMA submitted SWCA's Cultural Resource Inventory Report (Weldy 2022) to SHPO and any tribes with designated interest in project actions on August 11, 2022. Tribes may act as consulting parties to the Section 106 process, whether or not the undertakings are on tribal land. SHPO reviewed the report during a 30-day formal comment period and concurred with the undertaking as long as the recommended additional conservation measures would be implemented. These measures are incorporated in Cultural-1 and Cultural-2 (Section 3.2.3). Subject to public comment, FEMA has determined that the proposed undertaking would have no adverse effect to historic properties.

Conservation measures described in EA Section 3.2.2 (Cultural-1 and Cultural-2) would be reviewed and implemented to avoid impacts to cultural resources and ensure a no adverse effect impact for the project. To date, no responses from tribes have been received for the proposed project.

7.3 Endangered Species Act Section 7 Consultation

A pedestrian natural resources survey of the project area was conducted on May 19 and 20 and July 8, 2022, to identify the potential for special-status species and habitat communities regulated by the USFWS under Section 7 of the ESA, active and inactive migratory bird nests protected by the MBTA, and general biological conditions of the project area. No adverse effects to threatened and endangered species are anticipated from the Proposed Action. Therefore, FEMA has not consulted with the USFWS on the proposed federal action.

7.4 Public Participation

The CPSWCD will notify the public of the availability of the draft EA through the publication of a public notice in the Albuquerque Journal (see Appendix D), and via e-mail to the stakeholders list in below. The draft EA will be made available for public review at the CPSWCD office, 1206 South Highway 55, P.O. Box 129, Mountainair, NM 87036, and on FEMA's website (https://www.fema.gov/emergency-managers/practitioners/environmental-historic/region/6). FEMA will conduct a 30-day public comment period commencing on the initial date of publication of the public notice.

Agencies and other entities contacted formally or informally in preparation of this EA and/or that were notified of the public review of the document include the following:

- Chilili Land Grant
- Deer Canyon Preserve Homeowners Association
- FEMA Region 6
- Manzano Land Grant
- New Mexico Department of Game and Fish
- NMDHSEM
- NMED
- SHPO
- New Mexico State Forestry Division
- Tajique Land Grant
- Torrance County
- USFWS
- U.S. Forest Service Mountainair Ranger District
- EPA

Interested Pueblos and Tribes:

- Comanche Nation
- Hopi Tribe of Arizona
- Jicarilla Apache Nation
- Kiowa Tribe
- Mescalero Apache Tribe
- Navajo Nation
- Pueblo of Isleta
- Pueblo of Tesuque

8 LITERATURE CITED

Bellassen, V., and S. Luyssaert. 2014. Carbon sequestration: Managing forests in uncertain times. *Nature* 506:153–155 (13 February 2014).

Biota Information System of New Mexico (BISON-M). 2022. BISON-M home page. Available at http://www.bison-m.org/. Accessed July 2022.

Cartron, J-L.E. (ed.). 2010. *Raptors of New Mexico*. Albuquerque: University of New Mexico Press.

Cooper, C.F. 1960. Changes in vegetation, structure and growth of southwestern pine forests since white settlement. *Ecological Monographs* 30:129–164.

Covington, W.W. 2000. Helping western forests heal: The prognosis is poor for US forest ecosystems. *Nature* 408(6809):135–163.

Covington, W.W., P.Z. Fulé, M.M. Moore, S.C. Hart, T.E. Kolb, J.N. Mast, S.S. Sackett, and M.R. Wagner. 1997. Restoring ecosystem health in ponderosa pine forests of the southwest. *Journal of Forestry* 95:23–29.

Dunbar, N.W., D.S. Gutzler, F.M. Phillips, C.D. Allen, D. Dubois, J.P. King, L.D. McFadden, B.M. Thomson, A.C. Tillery. 2021. Climate change in New Mexico over the next 50 years: Impacts on water resources. Climate and Water Science Advisory Panel – Report, New Mexico Bureau of Geology and Mineral Resources Bulletin.

Federal Emergency Management Agency (FEMA). 2022a. Hazard Mitigation Grant Program (HMGP). Available at: https://www.fema.gov/grants/mitigation/hazard-mitigation. Accessed June 2022.

———. 2022b. FEMA Flood Map Service Center. Available at: https://www.fema.gov/flood-maps?web=1&wdLOR=cF7FCF011-1EFE-452E-AEA0-C79AD2E5AF80. Accessed June 2022.

Friggens, M.M., and D.M. Finch. 2015. Expected change in suitable habitat for riparian species along the Rio Grande in New Mexico under changing climate. Fort Collins, Colorado: Forest Service Research Data Archive.

Greacen, E.L., and R. Sands. 1980. Compaction of forest soils: A review. *Soil Research* 18(2):163-189.

Griffith, G.E., J.M. Omernik, M.M. McGraw, G.Z. Jacobi, C.M. Canavan, T.S. Schrader, D. Mercer, R. Hill, and B.C. Moran. 2006. Ecoregions of New Mexico (two-sided color poster with map, descriptive text, summary tables, and photographs). Reston, Virginia: U.S. Geological Survey. Scale 1:1,400,000.

Hatchett, B., M.P. Hogan, and M.E. Grismer. 2006. Mechanized mastication effects on soil compaction and runoff from forests in the Western Lake Tahoe Basin. *California Agriculture*, 60(2), pp.77-82.

Karl, T.R. (ed.). 2009. Global Climate Change Impacts in the United States. Cambridge University Press.

Maurer, E.P., L. Brekke, T. Pruitt, and P.P. Duffy. 2007. Fine-resolution climate projections enhance regional climate change impact studies. *Eos, Transactions American Geophysical Union* 88 (2007): 504-504.

National Weather Service. 2021. North American Monsoon highlights. Available at: https://www.weather.gov/abq/northamericanmonsoon-intro. Accessed June 2022.

Natural Resources Conservation Service. 2013. Web Soil Survey Tool. Available at: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. Accessed July 2022.

New Mexico Bureau of Geology and Mineral Resources. 2022. Aquifer Mapping Program. Available at: https://geoinfo.nmt.edu/resources/water/amp/home.html. Accessed June 2022.

New Mexico Environment Department (NMED). 2016. FINAL 2016 - 2018 State of New Mexico Clean Water Act Section 303(d)/Section 305(b) Integrated Report APPENDIX A – Integrated List. Available at: https://www-archive.env.nm.gov/wp-content/uploads/sites/25/2019/04/EPA-APPROVED2016RecordofDecision.pdf. Accessed July 2022.

New Mexico Rare Plant Technical Council. 1999. New Mexico Rare Plants Website (Updated July 5, 2022). Available at: http://nmrareplants.unm.edu. Accessed July 2022.

Occupational Safety and Health Administration. 2013. OSHA Technical Manual Section III: Chapter 5 – Noise. Available at: https://www.osha.gov/dts/osta/otm/new_noise/#decibles. Accessed June 2022.

Page, D.H. 2008. Preliminary thinning guidelines using stand density index for the maintenance of uneven-aged pinyon-juniper ecosystems. In: *Ecology, management, and restoration of pinon-juniper and ponderosa pine ecosystems: combined proceedings of the 2005 St. George, Utah and 2006 Albuquerque, New Mexico workshops*. G.J. Gottfried, J.D. Shaw, and P.L. Ford, compilers. Proceedings RMRS-P-51. Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. pp. 104–112.

Rubel, F., and M. Kottek. 2010. Observed and projected climate shifts 1901–2100 depicted by world maps of the Köppen-Geiger climate classification. *Meteorol. Z.* 19:135–141. DOI: 10.1127/0941-2948/2010/0430.

Ryan, M.G., R.A. Birdsey, and S.J. Hines. 2012. Forests and Carbon Storage. U.S. Department of Agriculture, Forest Service, Climate Change Resource Center.

Ryan, R.L. 2005. *Social Science to Improve Fuels Management: A Synthesis of Research on Aesthetics and Fuels Management*. General Technical Report NC-261. St. Paul, Minnesota: U.S. Forest Service, North Central Research Station.

Stahlecker, D.W., and H.A. Walker. 2010. Bald eagle. In *Raptors of New Mexico*, edited by J.-L.E. Cartron, pp. 131–149. Albuquerque: University of New Mexico Press.

SWCA Environmental Consultants (SWCA). 2016a. 2016 Update of Torrance County Community Wildfire Protection Plan. Prepared for Torrance County, New Mexico. Available at: http://www.claunchpinto.org/projects/wildfire-protection/2016_update-torrance-county.pdf. Accessed July 2022.

———. 2016b. 2016 Update of the Claunch-Pinto Soil and Water Conservation District Community Wildfire Protection Plan. Prepared for Claunch-Pinto Soil and Water Conservation District.

U.S. Bureau of Reclamation. 2011. SECURE Water Act Section 9503(c) – Reclamation Climate Change and Water Report to Congress. Prepared for United States Congress. Denver, Colorado: Bureau of Reclamation, Policy and Administration.

———. 2016. SECURE Water Act Section 9503(c) – Reclamation Climate Change and Water. Prepared for United States Congress. Denver, Colorado: Bureau of Reclamation, Policy and Administration.

U.S. Census Bureau. 2020a. Census Data, 2015-2019 American Community Survey 5-Year Estimates. Available at: https://data.census.gov/cedsci/. Accessed June 2022.

———. 2020b. 2020 Decennial Redistricting Data. Available at: https://data.census.gov/cedsci/. Accessed June 2022.

U.S. Environmental Protection Agency (EPA). 2015. Nonattainment Areas for Criteria Pollutants (Green Book). Available at: https://www.epa.gov/green-book. Accessed June 2022. Accessed July 2022.

———. 2021a. EJ Screen: EPA's Environmental Justice Screening and Mapping Tool, version 2.0. Available at: https://ejscreen.epa.gov/mapper/. Accessed June 2022.

———. 2021b. Underground Storage Tank (UST) Finder, EPA's GeoPlatform. Available at: https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=b03763d3f2754461adf86f121345d7bc. Accessed June 2022.

———. 2022. NEPAssist Tool. Version 2020.04.002. Available at: https://nepassisttool.epa.gov/nepassist/nepamap.aspx. Accessed June 2022.

U.S. Fish and Wildlife Service (USFWS). 2022a. Information for Planning and Consultation (IPaC) system. Available at: http://ecos.fws.gov/ipac/. Accessed July 2022.

———. 2022b. Mexican Spotted Owl (*Strix occidentalis lucida*). Available at: https://ecos.fws.gov/ecp/species/8196. Accessed July 2022.

U.S. Forest Service. 1974. *National Forest Landscape Management: The Visual Management System*. Agricultural Handbook 462. Washington, D.C.: U.S. Department of Agriculture, Forest Service.

———. 2019. Wild and Scenic Rivers Shapefile. Accessed through ESRI online map services database. Available at: https://www.rivers.gov/mapping-gis.php. Accessed June 2022.

Weldy, M. 2022. *A Class III Cultural Resources Investigation for the Claunch-Pinto Soil and Water Conservation District Fuels Reduction Project in Torrance County, New Mexico.* NMCRIS Activity Number 150475. SWCA Report Number 22-241. Albuquerque, New Mexico.

Western Regional Climate Center. 2022. New Mexico Climate Summaries: Mountainair, New Mexico (COOP Station 295965). Available at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm0231. Accessed June 2022.

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