Western
AREA POWER
ADMINISTRATION

DRAFT Environmental Assessment for the Glen Canyon to Pinnacle Peak 345 kV Transmission Lines Vegetation Management Project within the Coconino National Forest

November 2011

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1.1 INTRODUCTION AND BACKGROUND

The Western Area Power Administration, Desert Southwest Region (Western) markets and delivers federal hydroelectric power to nearly 70 municipalities, cooperatives, federal and state agencies, and irrigation districts. Most power sold by Western is generated from power plants operated at Hoover, Parker, and Davis dams; as well as from hydroelectric projects in the Bureau of Reclamation's (BOR) Upper Colorado Region and the federal portion of power generated at the Navajo Generating Station near Page, Arizona. Western operates and maintains more than 40 substations and 3,100 miles (4,950 kilometers) of transmission line to ensure system reliability. Within the Desert Southwest Region, Western owns, operates, and maintains 69-kilovolt (kV), 115 kV, 230 kV, 345 kV, and 500 kV, transmission lines in eleven counties in Arizona; San Bernardino, Riverside, and Imperial counties in California; San Juan County in New Mexico; and Clark County in Nevada. These transmission lines include the Glen Canyon-Flagstaff and Flagstaff-Pinnacle Peak transmission lines. Collectively, the portions of these 345 kV transmission lines and associated access roads from Glen Canyon Dam to Pinnacle Peak that traverse the Coconino National Forest (CNF) compose the Project area (Figure 1-1). These transmission lines pass through rugged, and in some cases densely vegetated, areas in northern and central Arizona, requiring proactive vegetation management and right-of-way maintenance. Western's Integrated Vegetation Management (IVM) Guide and Transmission Vegetation Management Program (Western 2011) employs an adaptive management approach that follows environmentally protective vegetation-control principles for potentially hazardous vegetation, including natural, physical, and mechanical control. Section 2 – Proposed Action and Alternatives, provides additional details on these vegetation control methods.

Pursuant to Section 7 of the federal Endangered Species Act (ESA), a biological assessment (BA) and biological opinion (BO) were completed in 2008 by the U.S. Forest Service (USFS) and U.S. Fish and Wildlife Service (USFWS), for operation and maintenance activities on all existing transmission and distribution line rights-of-way within the Coconino, Apache-Sitgreaves, Kaibab, Prescott, and Tonto National Forests in Arizona. Western also has a current programmatic agreement (PA) with the Arizona State Historic Preservation Officer (SHPO), pursuant to Section 106 of the National Historic Preservation Act (NHPA), for existing operation and maintenance activities.

The Glen Canyon to Pinnacle Peak 345 kV vegetation management and right-of-way maintenance project (Project) serves to update the existing operation and maintenance program to include all transmission facilities and access roads into one comprehensive and proactive vegetation management and right-of-way maintenance program (Program). This environmental assessment (EA) analyzes the potential environmental consequences of the proposed Project, as required under the National Environmental Policy Act (NEPA) and other relevant federal regulations.

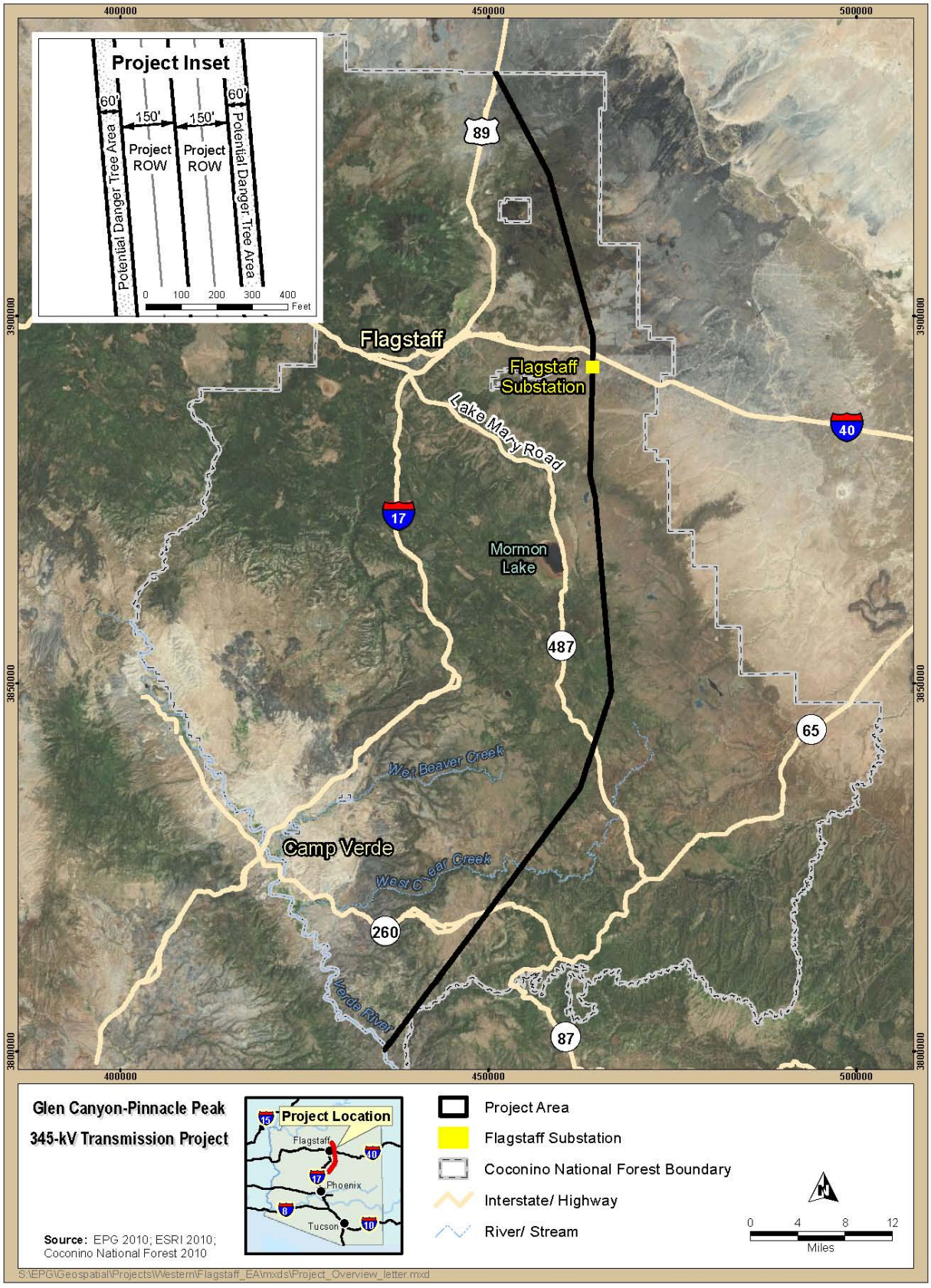

Figure 1-1. Project Area Overview

1.2 PURPOSE AND NEED FOR ACTION

The purpose of the Project is to maintain existing transmission line and access road rights-of-way in a manner that: (1) is consistent with Western practices and Orders, including applicable reliability standards, and (2) protects environmental resources to the extent practicable, while improving the efficiency and effectiveness of vegetation management and right-of-way maintenance activities. Western has designed this Program to balance environmental protection with system reliability and compliance with the National Electric Safety Code; Western Electricity Coordinating Council requirements; North American Electric Reliability Corporation (NERC) reliability standards; Institute of Electrical and Electronics Engineers standards; and Western's Guidelines, Requirements, Inspections, and Procedures (GRIP), Western Order 450.3A, and directives for maintaining system reliability and protection of human safety.

To meet this purpose, Western's objectives are to maintain its rights-of-way to:

- meet NERC reliability standards
- provide uninterrupted service to customers
- provide safe and efficient transmission of power along existing lines
- provide safe and reasonable access to the lines and structures for inspection and maintenance
- provide protection against wildfires that could result from vegetation coming into contact with transmission lines or arcing to the power line

Because of the potential for service outages from trees growing into the line, falling into the line, or creating a fire hazard to the transmission lines and structures, and because regulations regarding vegetation along transmission lines have recently become more strict, a comprehensive vegetation management and right-of-way maintenance program is needed. Failure to address vegetation clearance and fuel hazards could result in wildfires, major power outages, and injury to life or property. The need for the Proposed Action includes:

- Eliminating the threat of vegetation that interferes with the transmission lines and towers. Vegetation near transmission lines may pose a threat to public safety and the environment from arcing (which can cause fires), and trees falling onto the transmission lines and/or structures.
- Complying with NERC reliability standards (FAC-003-1 [NERC 2006]) that deal with vegetation inspections and treatment, to maintain transmission lines in safe and reliable operating conditions as well as various aspects of the planning and operation of the power system.
- Performing operation and maintenance activities in a manner that benefits the public by virtue of uninterrupted service, and minimizes Western's potential for costly fines for NERC noncompliance.
- Maintaining the transmission line rights-of-way and access roads to ensure that Western's maintenance crews have safe access to right-of-way facilities.

1.3 LOCATION AND PROJECT AREA DESCRIPTION

The Glen Canyon-Pinnacle Peak 345 kV transmission lines were constructed in 1966 on self-supporting lattice steel structures; the transmission lines are located predominantly in Coconino

and Yavapai counties, Arizona, east of I-17. The Glen Canyon-Flagstaff and Flagstaff-Pinnacle Peak projects have two adjacent and parallel transmission facilities within their cumulative right-of-way. Each individual transmission facility has an existing right-of-way of 150 feet, for a cumulative right-of-way width of 300 feet. When the transmission lines were initially constructed in 1966, all vegetation within the 300-foot right-of-way area was removed and/or altered from its natural state. Since that time, successional vegetation growth has been allowed to occur, resulting in large woody species (e.g., ponderosa pine, Gambel oak, piñon pine, juniper, and other trees) to reinhabit the right-of-way. In addition, trees that pose an immediate hazard to the safe and reliable operation of the Project outside of the right-of-way are also considered to be part of the Project area. Potential danger trees, defined as trees located within or adjacent to the right-of-way that present a hazard to employees, the public, or power system facilities, may be identified as far as 60 feet outside the edge of the right-of-way (USFS 2008). To account for potential danger trees, the Project area includes an additional 60 feet beyond both right-of-way edges, for a total Project area width of 420 feet (Figure 1-2).

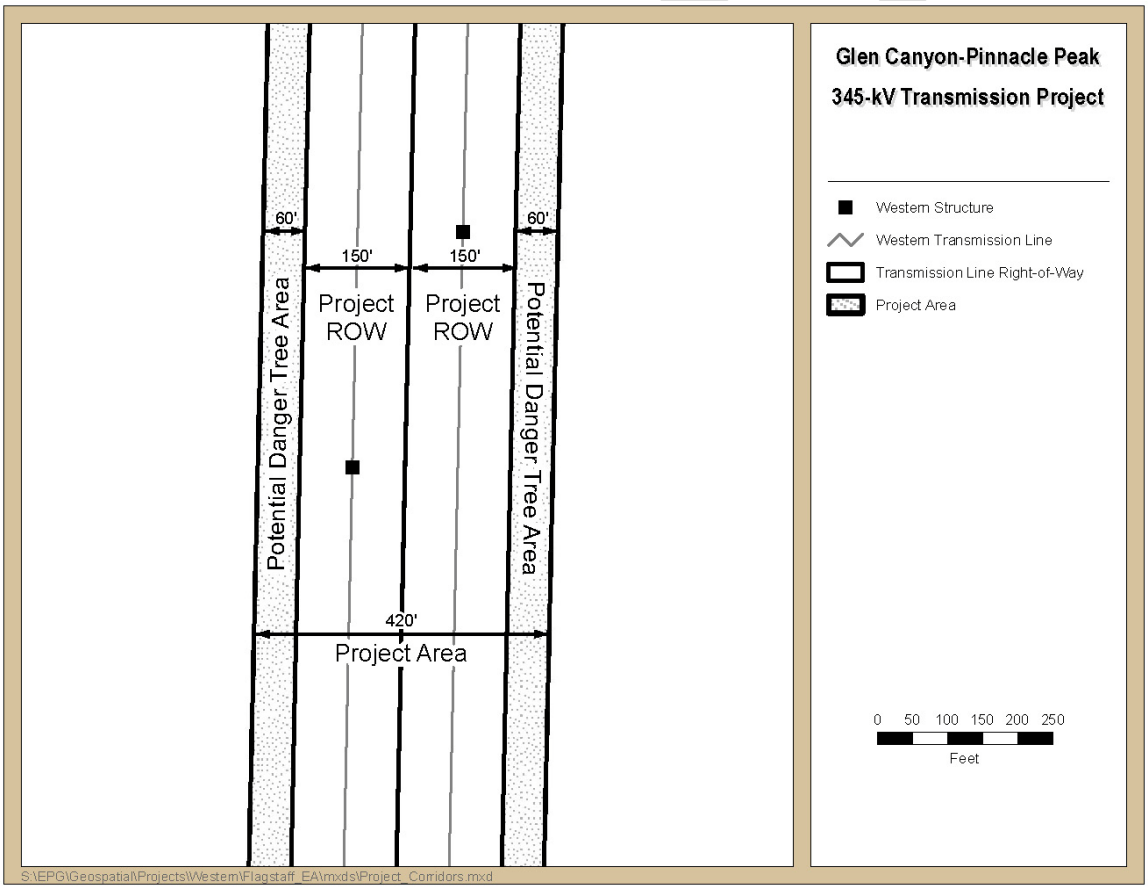

Figure 1-2. Project Area Dimensions

This EA is intended to cover the portions of the transmission line rights-of-way and potential danger tree areas that are within the jurisdictional boundaries of the CNF. The Glen Canyon-Flagstaff transmission lines traverse approximately 26 miles of the CNF, starting at the Flagstaff Substation (south of I-40) and proceeding northwest to the northern boundary of the CNF where the transmission lines cross U.S. Highway 89. Similarly, the Flagstaff-Pinnacle Peak transmission lines traverse approximately 64 miles of the CNF, starting at the Flagstaff

Substation and proceeding south-southwest to the southern boundary of the CNF where the transmission lines cross Fossil Creek (approximately 18 miles southeast of Camp Verde). The total length of Western transmission lines on CNF land is approximately 90 miles.

1.4 EXISITING OPERATION AND MAINTENANCE ACTIVITIES

Vegetation within and adjacent to the Project rights-of-way has primarily been managed on a reactive basis, where only immediate vegetative hazards have been treated. When vegetation reaches a hazardous condition for continued operation of the transmission facilities, Western may identify this as an emergency situation. When emergency situations for the transmission facilities are identified, Western is not subject to conservation measures and/or best management practices that would otherwise govern vegetation management activities.

Most of the vegetation that has been treated occurred directly beneath and immediately outside the periphery of the 345 kV conductors. Vegetation out to the full width of the right-of-way has not typically been managed; in some areas, this has allowed for the establishment of tall, dense stands of trees and other vegetation within and adjacent to the right-of-way that could pose a threat to the safe and reliable operation of the transmission lines.

Western currently uses aerial and ground patrols, and light detection and ranging (LIDAR) surveys to identify hazard vegetation for removal. Once hazard vegetation is identified, a crew of linemen enters the area and removes the hazard vegetation. Because the nature of hazard vegetation is "imminent," work to address hazards is conducted as quickly as possible.

1.4.1 Aerial Patrols

Western currently conducts aerial surveys for line maintenance and vegetation management, using a Bell Long Ranger passenger helicopter. The flights patrol each transmission line once per quarter, but do not follow a routine schedule. Flights could occur during any combination of months, three months apart out of a year, for multiple days at a time. Aerial patrols typically occur from 7:30 a.m. to 4:30 p.m. and typically take 2 days to complete. The low-level flights are intended to get a close look at the transmission line, structures, and associated equipment to identify areas that may require repair. Any problem areas identified during these patrols are recorded and scheduled for ground treatment and/or repair.

During aerial patrols, the helicopter flies close enough to Project facilities to ensure a detailed look at the transmission line structures, hardware, and the vegetation within and adjacent to the right-of-way. This generally ranges from 50 to 150 feet above ground level (AGL), varying with the height of the structures and the surrounding terrain. The speed of the helicopter during aerial patrols is approximately 60 to 80 miles per hour. The helicopter may hover or circle the rights-of-way to get a detailed look at damaged facilities or hazard vegetation. Western estimates that the helicopter does so up to six times per transmission line during a given aerial patrol. When necessary, the helicopter may land near the transmission line so that the aerial patrolman can get a closer look at the hardware that appears to have structural damage, and/or to get a closer look at hazard vegetation that might pose an immediate risk to the safe and reliable operation of the facility. The helicopter may land within or outside of the right-of-way, based on the nearest safe

landing area. Landing near the transmission line during aerial patrols typically occurs once or twice per patrol.

1.4.2 Ground Patrols

Western currently conducts routine ground and line maintenance patrols to follow up with problem areas identified during aerial patrols, as well as to identify hazard vegetation, plan for routine vegetation maintenance, and assess overall condition of the rights-of-way. Routine ground patrols typically focus on assessing the condition of Project access, while routine line maintenance patrols are intended to inspect and maintain Project structures and associated hardware. Routine ground and line maintenance patrols are conducted during the same patrol effort. These patrols are conducted from April to September by two linemen driving a pickup truck. Three or four crews may be staggered along the transmission line to facilitate timely completion of the patrol. Ground patrol vehicles typically drive on existing access roads and/or trails; however, within the Project rights-of-way and where access is clear (i.e., no environmental obstructions or limiting slope conditions), ground patrol vehicles may at times drive off of designated access roads to access Project facilities or connecting access roads. Ground patrols occur from 6:00 a.m. to 4:30 p.m.

Currently, routine transmission line maintenance and vegetation management ground patrols occur every 3 years for this Project. During ground patrols, the linemen may plan for a routine vegetation management project or identify and document hazard vegetation. For hazard vegetation, the linemen document the location, size, species, date, quantity, and method of anticipated removal for all hazard vegetation. The information gathered during this patrol is summarized and given to the work crews. Hazard vegetation is removed as quickly as possible at any time of the year.

Additional ground patrols may be conducted by two linemen to follow up after aerial patrols, to gather site-specific information on hazard vegetation identified during the aerial patrol. The linemen only inspect the particular area where hazard vegetation was located, but additional hazard vegetation may be identified during this ground inspection. The required information is documented for all hazard vegetation, and removal work is conducted as quickly as possible. Any additional consecutive days of removal work, if necessary, is also conducted at this time. Additional ground patrols for hazard vegetation identified during aerial patrols may occur at any time of year.

1.4.3 Light Detection and Ranging Data

Western also currently uses LIDAR data to identify and assess hazard vegetation within and adjacent to the right-of-way. LIDAR data is gathered by a low-level flying plane that emits a beam of light toward the ground. This beam of light bounces off the surface of natural and man-made objects (including the transmission line hardware, conductors, etc.) below the plane, and the LIDAR equipment records the distance AGL at which that beam of light is returned to the plane. The plane flies along the right-of-way until the entire width of the Project and specified surrounding area has been recorded. After data reduction, this process results in detailed imagery and identification of all natural and man-made objects within and adjacent to the Project right-of-way. Thresholds for vegetation clearance requirements are also input into the data reduction

process, and any vegetation within the required clearance distance is identified in the LIDAR report.

As necessary, linemen inspect areas identified by LIDAR surveys as having hazard vegetation, in accordance with the ground inspection process identified in Section 1.4.2.

1.5 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

This EA evaluates and presents the potential environmental consequences resulting from implementation of the Proposed Action and No Action alternative, including the methods and management approaches that compose the Proposed Action and No Action alternative, as well as those alternatives considered but eliminated from full EA evaluation; a detailed description of the affected environment and a comprehensive analysis of environmental consequences for the Proposed Action and No Action alternative for 16 environmental issue areas (e.g., air quality, biological resources, cultural resources, etc.); and a discussion of the cumulative effects with regard to the Proposed Action and No Action alternative.

Western has developed project conservation measures (PCM) to prevent and/or minimize adverse effects to sensitive resources in the right-of-way during Program activities. Western developed these conservation measures to proactively mitigate sensitive resources in the Project area. PCMs are specific to each resource and Program activity (see Table 2-2).

Assessment of the affected environment and environmental consequences relied on a combination of existing data (including biological data collected during the BA and BO that were completed for the Project area) and data collected during cultural resource field surveys. Surveys were conducted throughout the Project area between the northern boundary of the CNF, where the transmission lines cross U.S. Highway 89, and the southern CNF boundary, where the transmission lines cross Fossil Creek (approximately 18 miles southeast of Camp Verde). Western conducted cultural resource investigations to prepare a complete inventory of archaeological sites, and historic buildings and structures, located within or near the Project rights-of-way and access roads. The inventory efforts included a comprehensive literature search to identify and evaluate previous survey and site recording efforts, as well as an intensive pedestrian field survey of the Project rights-of-way and access roads.

Cultural Resource Surveys

Cultural resource surveys were conducted between May 17 and July 14, 2011, with subsequent visits to complete select site recordation between August and October 2011. Two 5-person teams of archaeologists conducted a comprehensive survey of the Project area. The survey was conducted systematically, with linear transects a maximum 20 meters wide. Each individual right-of-way segment was covered by either two or three transects. The goals of the cultural resource field survey were to:

- identify and record all cultural resources, including prehistoric sites, historic sites 45 years or older, and traditional cultural properties
- identify areas not surveyable and why (e.g., density of vegetation, degree of slope, etc.)
- re-record previously recorded sites
- evaluate the significance of cultural resources

Cultural sites and diagnostic artifacts were recorded with submeter accuracy using a GPS unit. In addition, data regarding each site were entered into the geographic information system (GIS) database using the GPS unit, in accordance with a standardized data dictionary. This information included site type, quantity and type of artifacts, site condition or integrity, and any explanatory comments.

1.6 COOPERATING AGENCIES

The Project traverses lands managed by the CNF. Under NEPA regulations, the CNF has become a cooperating agency in preparing this EA for the Project. Western has proactively met with the CNF and has requested input into the scope, alternatives, and environmental analysis. See Section 6.0 for a detailed description of agency coordination for this Project.

1.7 DECISIONS TO BE MADE

This EA, which is the responsibility of Western, is a concise public document that serves to:

- provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI)
- aid Western's compliance with NEPA when no EIS is necessary
- facilitate preparation of an EIS if one is necessary (40 CFR § 1508.9)

Based on the findings contained in this EA, Western will determine whether the proposed Program requires an EIS or if a FONSI should be prepared. If Western decides to prepare a FONSI, the document will present supporting rationale for that decision.

SECTION 2 – PROPOSED ACTION AND ALTERNATIVES

The Proposed Action and the No Action alternative have been retained for full analysis in this EA. Section 2.1 provides a detailed description of the Proposed Action, while Section 2.2 describes the vegetation management and right-of-way maintenance activities under the No Action alternative. Section 2.3 describes the alternatives considered but eliminated from full evaluation in the EA.

2.1 DESCRIPTION OF PROPOSED ACTION

Western proposes to develop and implement a vegetation management and right-of-way maintenance program on the CNF that allows for safe and reliable operation of their existing Glen Canyon-Flagstaff and Flagstaff-Pinnacle Peak 345 kV transmission lines. Consistent with the BA and corresponding BO prepared for the Project, Western's transmission lines require extensive vegetation removal within, and in some cases adjacent to, the Project rights-of-way. The Proposed Action consists of two primary components: (1) initial vegetation removal within and adjacent to the rights-of-way, and (2) vegetation management and right-of-way maintenance for Western's desired right-of-way condition. Initial vegetation removal and vegetation management and right-of-way maintenance are covered in detail in sections 2.1.1 and 2.1.2, respectively.

Based on a total length of approximately 90 miles and a Project area width of 420 feet, the Project area is estimated at approximately 4,580 acres, assuming flat ground; however, this may be an overestimate of the actual Project area that would require vegetation removal and management by Western. This Project crosses canyons, areas of steep slope, drainages, and washes. Project facilities span many of these areas at such a height that vegetation within these areas will not interfere with safe and reliable transmission line operation. In such areas, this vegetation may not need to be removed or maintained by Western. In addition, the Project area has a lower density of tall growing vegetation than surrounding habitat, since the right-of-way was cleared of all vegetation during construction.

Western's intent is to establish and maintain rights-of-way that minimize vegetative threats to the safe and reliable operation of the transmission system, and ultimately require infrequent (i.e., once every 5 years) treatments for vegetation management. Achieving Western's desired right-of-way condition (see Section 2.1.2) is an evolutionary process that may take several iterations of vegetation removal over an extended period of time. Once achieved, the desired condition will be proactively maintained through ongoing corridor vegetation management.

2.1.1 Initial Vegetation Removal

Because of the risk that vegetation typical to the vegetation communities (see Section 3.3.2) within the Project rights-of-way poses to the safe and reliable operation of the transmission lines, and because vegetation has not been substantially removed from the Project rights-of-way (except for individual hazard trees) since approximately 1966, Western plans to remove nearly all vegetation within the Project rights-of-way to initiate the Program. This will establish a baseline condition from which Western can safely and effectively manage vegetation and

maintain Project facilities. Where terrain conditions (i.e., certain canyon, wash, steep slope, and/or drainage crossings) provide for higher conductor clearances, typically a minimum of 50 to 100 feet AGL, vegetation may not conflict with the safe and reliable operation of the transmission lines, and thus would not necessitate removal. These areas would be evaluated on a case-by-case basis and identified by Western as preserve-in-place areas where vegetation would not be removed.

In addition to vegetation removal within the limits of the right-of-way, danger trees that pose an immediate hazard to the safe and reliable operation of the Project outside of the right-of-way may also be removed. These danger trees are defined as trees located within or adjacent to the right-of-way that present a hazard to employees, the public, or power system facilities. Characteristics used in identifying a danger tree include but are not limited to the following:

- encroachment within the safe distance to the conductor as a result of the tree bending, growing, swinging, or falling toward the conductor (Figure 2-1 through 2-4)
- deterioration or physical damage to the root system, trunk, stem or limbs, and/or the direction and lean of the tree
- vertical or horizontal conductor movement and increased sag as a result of thermal, wind, and ice loading
- potential for arcing with Project facilities in the event of wildfire, or providing wildfire fuel within the right-of-way

The BA prepared for maintenance in utility corridors on Arizona forests (USFS 2008) identified the greatest height of a tree that could be considered a hazard tree outside of the rights-of-way to be 110 feet. The BA also identified 105.8 feet as the maximum distance a tree can be located away from the transmission conductors before striking a conductor (based on a 30-foot AGL conductor clearance and a 110-foot tall tree). Based on these maximum heights and distances, the BA identified the striking distance of edge trees in relation to the right-of-way width of a 345 kV transmission facility in accordance with Table 2-1 and formula below.

Table 2-1. Striking Distance of Edge Trees to the Project Right-of-Way

Line Voltage	Tree Height (Feet)	Conductor Height (Feet, AGL)	Distance to Strike a Conductor (Feet)	Average Width Between Conductors (Feet)	Right-of-Way Width (Feet)	Distance Beyond Right-of-Way to Strike Conductor (Feet)
345 kV	110	30	105.8	56	150	58.8

Distance beyond right-of-way was calculated using: $105.8 - [(\frac{ROWwidth}{2}) - (\frac{ConductorWidth}{2})]$

Per the BA, trees within 60 feet of the Project rights-of-way that meet any of the criteria identified above may present a danger to the transmission lines due to wind, leaning, decay, other causes of instability, or fire. According to Western's IVM Guidance Manual, these danger trees must be removed. Four common hazardous vegetation scenarios are shown and described below.

- Bend-in trees (Figure 2-1) are located outside and adjacent to the right-of-way; they have tops or branches that bend down or could bend down into the minimum clearance distance to the transmission line conductor.

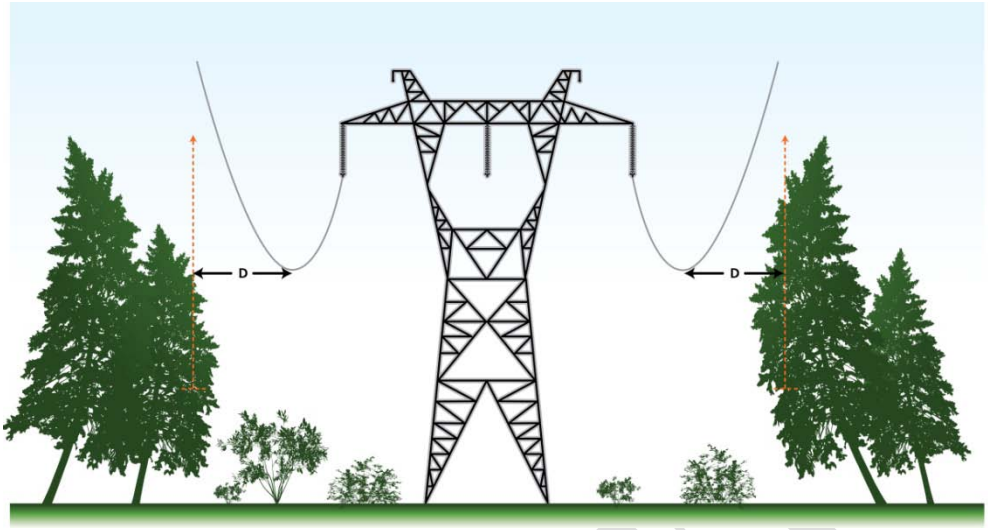

Figure 2-1. Bend-in Trees

- Grow-in trees (Figure 2-2) are located within and/or adjacent to the right-of-way; they have grown, or will grow, horizontally and vertically into the minimum clearance distance to the conductor.

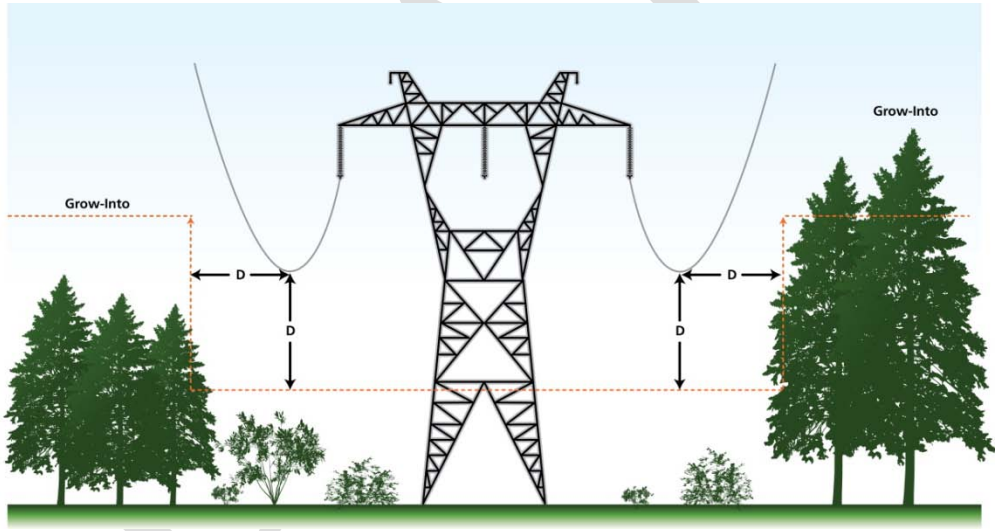

Figure 2-2. Grow-in Trees

- Swing-in trees (Figure 2-3) are located off and adjacent to the right-of-way, and whose branches would, or could, violate the minimum clearance distance to the conductor as a result of the conductor being blown toward the tree.

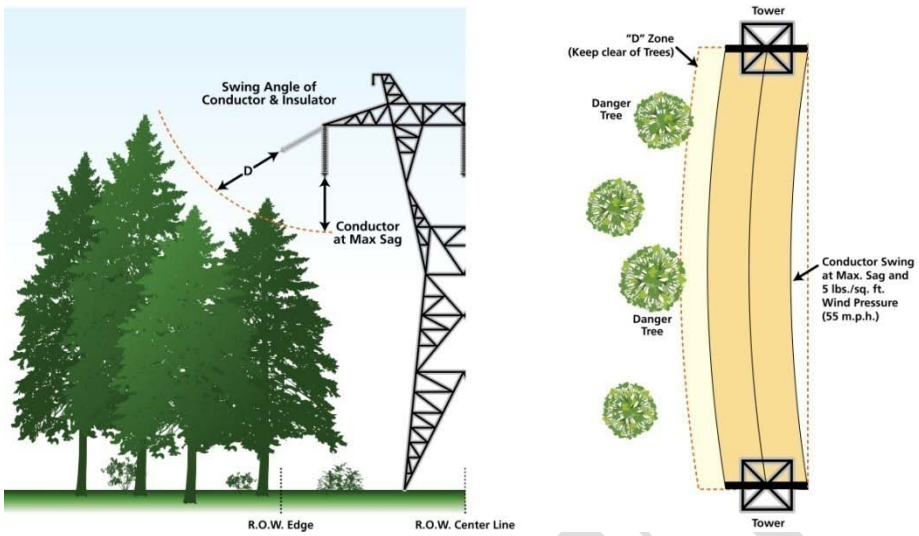

Figure 2-3. Swing-in Trees

- Fall-in trees (Figure 2-4) are any trees that, if they were to fall toward the transmission line, would extend into the minimum clearance distance to the conductor.

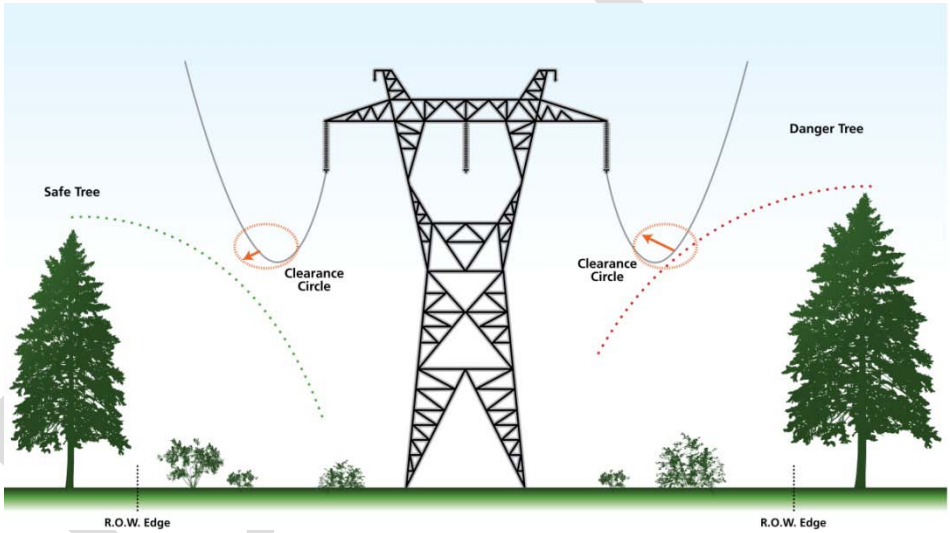

Figure 2-4. Fall-in Trees

2.1.1.1 Vegetation Removal Methods

Methods for vegetation removal consist of mechanical and manual methods. Vegetation within the rights-of-way would be removed predominantly through mechanical methods. Where access, terrain conditions, or resource sensitivity precludes the use of mechanical methods, manual vegetation removal methods (i.e., hand crews) would be employed. Descriptions of mechanical and manual vegetation removal methods are provided below.

Mechanical Vegetation Removal

Mechanical methods of vegetation removal occur within the Project rights-of-way. These methods include grinders, masticators, or mowers on wheeled or tracked equipment to remove target vegetation. Mechanical methods are less selective in that all vegetation within the area treated is affected. The majority of the Project area would be treated using mowers and/or masticators; however, areas where the masticator cannot access the rights-of-way, or where sensitive resources occur, manual vegetation removal methods (i.e., hand crews) would be utilized. Tracked equipment would be used, where needed, to minimize impacts to erodible or compressible soils.

One example of a typical Western mechanical method includes the use of a machine called a Cut-Shredder. A Cut-Shredder has a large drum with teeth that spins at high speeds and is mounted on a rubber-tired front end loader. The spinning teeth mulch and scatter tree and branch material across the right-of-way. The Cut-Shredder requires two people for operation, one to guide the machine and one to operate it. In addition, a follow-up crew with chainsaws to clean up after the machine and to manually cut trees or vegetation that was missed is typically required. Figure 2-5 represent examples of typical mowers that will be used to remove vegetation.

Figure 2-5. Examples of Tractor Mounted Mowers with Rubber Tires or Tracks

Manual Vegetation Removal

Western would also use manual vegetation removal methods (hand crews) to remove hazard vegetation (danger trees) outside of the right-of-way, and for some vegetation removal in areas not recommended for mechanical treatment within the right-of-way. Hand crews would consist of Western linemen or outside contractors certified as line clearance tree workers. Manual vegetation removal would include the use of hand tools (chain saws, hand saws, rope) to cut

branches and trunks of vegetation (Figure 2-6). Each hand crew would consist of six to eight men driving three to four pickup or bucket trucks. Crews would either walk to the right-of-way and vegetation treatment area from the nearest access point, or drive to and/or within the right-of-way where access to the vegetation treatment area is available. Western may mobilize multiple hand crews at a time. Hand crews may operate at any time of year, but would implement all applicable conservation measures for operation and maintenance activities. Hand crews operate from 6:00 a.m. to 4:30 p.m. Work would typically involve anywhere from 3 to 24 tree workers.

Figure 2-6. Hand Crew Worker Using Chain Saw

2.1.1.2 Vegetation Disposal

Once vegetation is removed within and adjacent to the right-of-way, various disposal methods would be used to disperse the vegetation debris. The objective of vegetation disposal is to dispose and/or distribute the leftover debris (i.e., chips, slash, and logs) from vegetation management activities in a cost effective and efficient manner that minimizes potential impacts to environmental resources on CNF land, while mitigating fire risk beneath and surrounding the transmission lines and structures.

Below is a list of methods of disposal that may be used for the Proposed Action. When determining the appropriate method, land uses, terrain, aesthetics, fire concerns, and sensitive environmental resource concerns are considered. The disposal methods list may not include all possible methods, but provides general methods for the purposes of analysis of effects to environmental resources.

Mechanical Removal Vegetation Disposal

When a mower is used for vegetation removal, the mower masticates the tree or vegetation into small chips. The chips are broadcast across the right-of-way at a thickness no greater than 4 inches. Trees or vegetation that mowers are unable to access are treated using manual methods. Disposal of vegetation removed by manual methods is described below.

Manual Removal Vegetation Disposal

Where manual methods are needed for vegetation removal, the following procedures and measures would be adhered to when disposing of vegetation.

- Limbs would be lopped and scattered throughout the immediate area (within and adjacent to the right-of-way, depending on the location of the removed tree) in a manner such that debris lies within 18 to 24 inches of the ground. Logs are cut to manageable lengths of 8 feet or less, and left within or adjacent to the right-of-way off of access routes.
- Stumps from tree removal are cut flush with the ground or cut within 4 to 12 inches of the ground when removal is not possible.
- No slash or logs are placed within 25 feet of the high water mark of streams or other bodies of water.
- All areas with the potential for flowing water (culverts, ditches, washes, etc.) are kept free of slash, logs, and debris from tree removal operations.

2.1.2 Vegetation Management and Right-of-Way Maintenance (Project Access Routes)

Once the rights-of-way have been sufficiently cleared of vegetation, Western would manage the Project to achieve their desired condition within their rights-of-way. Western's policy on Transmission Vegetation Management Program Western Order (O) 450.3A specifies that "*Western's desired condition beneath and adjacent to its transmission line facilities is characterized by stable, low growth plant communities free from noxious or invasive plants. These communities will typically be comprised of herbaceous plants and low growing shrubs which ideally are native to the local area. Vegetation on the bordering areas of transmission line rights-of-way can be managed so that increased tree height is allowed in relation to an increasing distance from the transmission line. Accumulations of vegetation debris from intensive or repetitive vegetation treatments may require mitigation to reduce risks from wildfire and enhance the fire survivability of the transmission facilities.*"

2.1.2.1 Vegetation Management

Western's vegetation management program is developed to ensure: (1) reliable, uninterrupted service to customers; (2) safe transmission and distribution of power along existing transmission lines; and (3) protection against wildfires that could result from vegetation coming into contact with or arcing to the transmission lines. Western's vegetation management program includes routine vegetation maintenance and hazard vegetation removal. Failure to address vegetation clearance and fuels hazards could result in wildfires from transmission line flash-overs and/or arcing, major power outages, and/or injury to life or property. Proper management of vegetation within the Project rights-of-way can minimize the chance of fire ignition by reducing available wildfire fuel sources.

New federal energy regulations mandate vegetation inspections and treatment to maintain transmission lines in safe and reliable operating conditions (NERC Reliability Standard FAC-003-1). Vegetation-to-conductor clearance standards are established through an agreement between the CNF and Western in an operating plan or corridor management plan required for the

Project, the process of which is described by the Utility Vegetation Management (UVM) Guidelines (USFS 2006) that was signed by Western in 2006.

Vegetation clearance distances required by NERC FAC-003-1 are provided in Western Order 430.1A, Right-of-Way Management Guidance for Vegetation, Encroachments, and Access Routes. Specifically, Western requires a minimum of 26 feet between conductors and vegetation; however, it is Western's general practice to manage for clearances greater than the established minimum to further reduce the potential for wildfire ignition. As described previously, Western's desired condition within the right-of-way is characterized by low growth plant communities; the vegetation clearance values described above represent the maximum but not preferred vegetation clearance thresholds allowed.

Vegetation management includes routine vegetation maintenance and hazard vegetation management as described in the sections below. As the rights-of-way are managed to achieve Western's desired condition and clearance standards, it is anticipated that low-growing vegetation (e.g., grasses and forbs, some small shrubs) would become the predominant condition within the rights-of-way and the occurrence of hazard vegetation and other tall-growing vegetation within and adjacent to the rights-of-way would decline over time, thus reducing the need for additional vegetation removal.

Routine Vegetation Maintenance

After Western has sufficiently removed vegetation within and adjacent to their rights-of-way from which they could manage vegetation for their desired condition, Western would implement routine vegetation maintenance. Routine vegetation maintenance would occur within the rights-of-way and is intended to enable Western to continue providing safe, efficient, and reliable electricity delivered through their transmission facilities to their customers.

Western would conduct routine vegetation maintenance for the Project rights-of-way according to a 5-year vegetation maintenance cycle. Routine vegetation maintenance would involve the identification and removal of vegetation within or adjacent to the rights-of-way that are incompatible with Western's desired condition. Western would use aerial patrols, ground patrols, and/or LIDAR surveys to identify routine vegetation maintenance needs, as described in sections 1.4.1 through 1.4.3. Growth cycles specific to target species for the Project would be considered according to the 5-year maintenance cycle. Any vegetation that would conflict with Western's desired condition within the 5-year routine maintenance cycle would be removed. All work would be conducted using predominantly mechanical mowers, with hand crews used only in areas where the mowers cannot access or where resource concerns occur. Work would be conducted any time during the day from 6:00 a.m. to 4:30 p.m., Monday to Friday.

Western's vegetation management manual (2011) requires that a minimum of 40 feet around concrete footers of transmission structures be maintained free of shrubs, trees, or other such vegetation that could pose a potential fire threat to transmission structures or associated hardware. This 40-foot clearance area is intended to provide a fire break, to minimize arcing of electricity or burning of structures during a fire under or near the transmission lines. Clearing around the footers of the Project transmission structures may also be necessary to provide access for Project maintenance vehicles. This clearance area would also maintain the integrity of the

transmission structures by minimizing the potential for trees or vegetation falling on the structures. This work would occur within the permitted rights-of-way.

All vegetation removal during routine vegetation maintenance activities would be done using either mechanical or manual removal methods, as described in Section 2.1.1.1. As with initial vegetation removal, where routine vegetation maintenance identifies areas of the Project requiring vegetation treatment, mechanical methods would be the preferred and predominant method to be used within the rights-of-way. Similarly, disposal of vegetation removed during routine vegetation maintenance would also be done in accordance with the procedures identified in Section 2.1.1.2, dependent upon the method of removal applied at a given location.

Hazard Vegetation Management

Hazard vegetation, including danger trees, can be located within or outside of the Project rights-of-way. In the BA, CNF identified locations within the Project area which have the highest risk for hazard vegetation based on factors such as topography, vegetation type, previous vegetation management projects, drought, and disease. This Project was rated by the CNF as the highest risk with "*Extreme high potential for hazard vegetation. Need for hazard removal is certain. Power line is likely to have the highest concentrations of hazard vegetation"* (USFS 2008).

Initial vegetation removal is intended to identify and remove immediate hazard vegetation and danger trees within and adjacent to the Project rights-of-way. However, as vegetation continues to grow on the periphery of the rights-of-way or beyond its boundaries, new or existing vegetation may become hazard vegetation or danger trees. As environmental conditions continually change, trees adjacent to the transmission lines and Project rights-of-way may present a danger of falling into the lines due to wind, leaning, decay, or other causes of instability. In accordance with Western's IVM Guidance Manual, hazard vegetation and danger trees must be removed. Western would use aerial patrols, ground patrols, and LIDAR surveys to identify hazard vegetation for removal. Once hazard vegetation is identified, a crew of linemen would be mobilized to remove the hazard vegetation. Hazard vegetation within the right-of-way would be treated using either mechanical or manual removal methods, while hazard vegetation outside of the right-of-way would only be treated using manual removal methods. Because of the nature of hazard vegetation being "imminent," work to address the hazards would be conducted as soon as possible and conservation measures to minimize effects may not be applicable. After removal, hazard vegetation would be disposed of as described in Section 2.1.1.2.

2.1.2.2 Project Access Routes

Adequate access routes are required and must be maintained to provide for safe, efficient, and cost effective Project operation and maintenance activities. It is Western's intent to use public forest service roads wherever possible to access the rights-of-way. In most cases, the Project transmission lines have roads that approach and/or follow the transmission facilities within the rights-of-way. Roads authorized for use are identified in Western's Memorandum of Understanding with the CNF (USFS 1962). To conduct vegetation management activities, Western would use established roads and access routes to approach the right-of-way and would remain within the right-of-way while conducting vegetation management (except for the removal of hazard vegetation outside the right-of-way, as necessary). Western would not create any new

roads or access routes to enter Project rights-of-way. If Project rights-of-way are not accessible by existing roads, Western would drive to the nearest location and crews would walk in with the necessary equipment to properly maintain vegetation.

Utility vehicles may travel on or off-road within Project rights-of-way, but do not typically travel off-road outside of the rights-of-way. Where off-road travel would be necessary outside the Project rights-of-way, only rubber tired vehicles would travel off-road, with no off-road travel through wetlands or running streams.

2.2 NO ACTION ALTERNATIVE

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Under a need-driven management approach, Western would mow, clear, remove, and dispose of vegetation within and along right-of-way segments as control needs are identified through periodic line patrols. Western would perform vegetation management using the current mix of manual and mechanical methods to control vegetation on transmission line and access road rights-of-way. Access road repairs would be performed as needed. Transmission system maintenance activities would consist of regular aerial and ground patrols to locate problems, repairs to correct problems, and preventative maintenance. These are all consistent with the USFWS 2008 programmatic BO and the PA with the SHPO.

The primary difference between the Proposed Action and the No Action alternative is the potential for a more proactive approach to vegetation management, rather than a reactive one. In addition, vegetation management would be based on a 5-year cycle directed toward Western's desired right-of-way condition of a low growing vegetation community free of noxious weeds.

2.3 ALTERNATIVES ELIMINATED FROM FULL ENVIRONMENTAL ASSESSMENT EVALUATION

Alternatives were assessed on their ability to reasonably respond to the purpose and need for action. This section provides the rationale for each alternative identified and eliminated from full EA evaluation.

2.3.1 Removal of Vegetation that Conflicts, or has the Potential to Conflict, with Western Conductor-to-Vegetation Clearance Requirements Only Alternative

Under this alternative, currently approved vegetation removal practices and methods would be used to remove vegetation throughout the Project area that either conflicts, or has the potential to conflict, with Western's required conductor clearances (i.e., 26-foot minimum). In addition, dense stands of vegetation within the right-of-way that do not encroach within the minimum conductor clearance requirements, but present an immediate hazard to the facility due to potential arcing that could occur from smoke plumes in the event of a wildfire, would be removed. In contrast to the Proposed Action, vegetation that would not conflict with these minimum clearance requirements, and that do not pose an immediate wildfire threat to the transmission facilities, would remain in place throughout the Project area.

This alternative would result in more frequent vegetation management and facility maintenance activities. These frequent vegetation management and facility maintenance trips would increase potential for ground disturbance, overall emissions, hazardous material and petroleum spills, long-term intermittent noise levels, and the potential for disturbance to biological resources. In addition, this alternative could increase the potential for service interruption from wildfire within the Project area, as a result of added biomass and wildfire fuels within the Project area. As a result, this alternative was eliminated from further consideration in this EA.

2.3.2 Establishment and Management of a Wire Zone and Border Zone Alternative

Under this alternative, a process of vegetation community conversion would be implemented within the Project rights-of-way. In general, Western would remove vegetation within the existing rights-of-way to establish a wire zone and border zone for vegetation management activities. The wire zone would be defined as the portion of the right-of-way directly beneath the conductors and 10 feet beyond the outside edge of the conductors. The border zone ranges from 10 feet outside the outer phases to the edge of the right-of-way. The wire zone would be managed to promote a low-growing plant community dominated by grasses, herbs, and small shrubs (typically under 3 feet in height at maturity), while the border zone would be managed to preserve or establish small trees and tall shrubs (typically under 25 feet in height at maturity).

Within the wire zone, nearly all existing woody vegetation and shrubs would be removed. Within the border zone, small trees, tall shrubs, and other vegetation up to 25 feet in height at maturity may remain in place, provided the minimum conductor clearances could still be met. This process would continue within the two designated zones until vegetation cover types have been converted to low-growing grasses and forbs in the wire zone, and small trees and tall shrubs in the border zone.

This alternative would not be consistent with Western's desired condition for the entire right-of-way, which would be characterized by stable (within the context of a 5-year vegetation management cycle), low growth plant communities typically composed of herbaceous plants and low-growing shrubs free from noxious or invasive plants. Western's desired condition for the rights-of-way creates a fuel break in the event of a wildfire, which minimizes wildfire intensity in the vicinity of Project facilities. The presence of tall shrubs and small trees within portions of the rights-of-way (i.e., border zone) would not be consistent with Western's intent to reduce fuel loads within the rights-of-way, which when implemented, protects Project facilities from the effects of wildfire (i.e., damage to transmission hardware, arcing from nearby vegetation into conductors, etc.) and minimizes service interruption to Western's delivery base. In addition, new NERC regulations (NERC Reliability Standard FAC-003-1) impose costly fines on utilities where it is demonstrated that outages on transmission facilities is the result of improperly managed vegetation within their rights-of-way. Because of these risks, this alternative was eliminated from analysis in this EA.

Table 2-2. Project Conservation Measures by Resource		
PCM #	**Description**	**Responsible Party**
Multiple Resources		
1	All vehicle movement outside the right-of-way would normally be restricted to pre-designated access, contractor acquired access, or public roads.	Western/Contractor
2	The boundary of construction activities would normally be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction activity limits.	Western/Contractor
3	To limit new disturbance, existing access roads in the Project area would be used to the extent practicable, provided that doing so does not additionally impact resource values.	Western/Contractor
4	Ensure all crews entering construction site have been provided training to recognize and respond to occurrences of cultural and natural resources and optimally protect the environment.	Western
5	Fences and gates would be repaired or replaced to their original pre-disturbed condition as required by the landowner or the CNF Authorized Officer if they are damaged or destroyed by vegetation management and right-of-way maintenance activities. New temporary and/or permanent gates will be installed only with the permission of the landowner or CNF.	Western/Contractor
6	During vegetation management and right-of-way maintenance activities for the transmission line(s), the right-of-way would be maintained free of non-biodegradable debris. Slash will be left in place or disposed of in accordance with requirements of the Biological Assessment (BA) prepared for maintenance in utility corridors on the CNF.	Western/Contractor
7	All existing roads will be left in a condition equal to their condition prior to vegetation management and right-of-way maintenance activities along the transmission line.	Western/Contractor
8	There will be no open burning of trash generated by vegetation management and right-of-way maintenance crews.	Western/Contractor
9	Caves, mine tunnels, and rock outcrops will not be entered, climbed upon, or otherwise disturbed.	Western/Contractor
10	Vehicles will be inspected daily for fluid leaks before entering the CNF.	Western/Contractor
11	At canyon, wash, river, stream crossings where appropriate conductor-vegetation clearances can be maintained, vegetation will be left in place to the extent feasible to allow for safe and reliable operation of the project facilities.	Western/Contractor
12	Western and its contractors will comply with all applicable federal and state regulations regarding fire suppression, including but not limited to having vehicles be equipped with a shovel and fire extinguisher, and the use of spark arrestors on combustion engines. Verification of daily fire levels during fire season will occur.	Western/Contractor
Biology Resources		
13	All vegetation management and right-of-way maintenance activities shall be conducted in a manner that will minimize disturbance to drainage channels, and intermittent and perennial streambanks to the extent practicable.	Western/Contractor
14	In areas where mechanical vegetation removal is not permitted or feasible (e.g., sensitive resource areas, terrain constraints, etc.), vegetation would be left in place wherever possible, and original contour would be maintained to avoid excessive root damage.	Western/Contractor

Table 2-2. Project Conservation Measures by Resource		
PCM #	**Description**	**Responsible Party**
15	Monitoring of vegetation management and right-of-way maintenance activities may be required in some areas to ensure that species listed under the ESA or as specified by the CNF and state or county authority as sensitive or of concern are avoided during vegetation management and right-of-way maintenance. Additionally, if Bald or Golden Eagle nests are identified in the project area, seasonal restrictions on vegetation management and right-of-way maintenance in affected areas would be implemented where applicable according to current USFWS protocol to comply with the Bald and Golden Eagle Protection Act.	Western/Contractor
16	Measures to control noxious weeds will be incorporated into project planning, implementation, and monitoring. Western will clean seeds from ground-disturbing equipment before entering or moving between project areas.	Western/Contractor
17	Field monitoring personnel (i.e., archaeological and biological monitors) will have access to the operations and maintenance GIS database in the field to be able to identify sensitive resources and associated PCMs.	Western/Contractor
18	To protect nesting birds (birds not specifically protected by PCMs but protected by the Migratory Bird Treaty Act), whose nests could occur within the right-of-way, Western and its subcontractors will perform vegetation management and right-of-way maintenance activities outside the nesting season, which runs from April 1 through August 15 in the CNF. Alternatively, a qualified biologist will conduct nesting-bird surveys prior to project activities. For special-status birds, see PCM 16 and MSO PCMs. • An additional survey may be required if gaps between the survey and the project activity exceed three weeks. • Should an active nest be discovered, the qualified biologist will establish an appropriate buffer zone (in which operations and maintenance activity is not allowed) to avoid disturbance in the vicinity of the nest. Maintenance activities will not take place until the biologist has determined that the nestlings have fledged or that maintenance activities will not adversely affect adults or newly fledged young. • Alternatively, the qualified biologist will develop a monitoring/mitigation plan that permits the maintenance activity to continue in the vicinity of the nest while monitoring nesting activities to ensure that the nesting birds are not disturbed.	Western/Contractor
Mexican Spotted Owl (MSO)		
19	Monitor and report proposed utility actions annually. This would include tree species, location, condition and size class, information as outlined in Appendix D of the Biological Assessment.	Western/Contractor
20	Avoid ground work (use of equipment) within PACs between March 1 and August 31.	Western/Contractor
21	Avoid use of loud machinery within 0.25 mile of PACs between March 1 and August 31, with goal to limit noise levels at PAC boundary to < 56 decibels (dbA).	Western/Contractor

Table 2-2. Project Conservation Measures by Resource		
PCM #	**Description**	**Responsible Party**
22	For hazard line maintenance and/or vegetation hazard treatment in a MSO PAC during the breeding season, coordinate the timing of the hazard treatments such that work is consolidated into the least number of days and least number of trips in and out of the PAC to minimize the duration and frequency of disturbance to the MSO as much as possible.	Western/Contractor
23	Coordinate disposal methods with the Forest Service District and, if appropriate/feasible, leave large (>12 inches) logs at edge of right-of-way in or adjacent to PACs.	Western/Contractor/CNF
24	When feasible, schedule hazard line maintenance and vegetation treatments after breeding season (i.e., defer activity to later date when low priority or when not an imminent threat to safe operation of lines/structures).	Western/Contractor
25	It is recommended that trees > 24 inches diameter at breast height within PACs be retained unless over-riding management situations require their removal to protect human safety and/or property (for example, the removal of danger trees along power lines).	Western/Contractor
26	Retention of hardwood, large downed logs, large trees, and snags is recommended to an extent that it does not significantly impede the overriding objective of reducing the risk of high-severity fire in MSO habitat.	Western/Contractor
Water Resources		
27	Watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) would be repaired or replaced if they are damaged or destroyed by vegetation management and right-of-way maintenance activities to their predisturbed condition as required by the landowner or CNF.	Western/Contractor
28	Run-off control structures, diversion ditches, erosion-control structures, and energy dissipaters will be cleaned, maintained, repaired, and replaced to meet the standards set by applicable permits and the Storm Water Pollution Prevention Plan (SWPPP), or where such a plan is inapplicable, similar standards set by Western or the applicable federal land manager.	Western/Contractor
29	Sediment-control devices (e.g., placement of native rock, etc.) will be used at all dry wash crossings as determined in the SWPPP for the Project.	Western/Contractor
30	Wet areas will be avoided to the extent practicable and all activity will be minimized during winter and other wet periods to prevent damage (e.g., rutting, erosion, soil compaction). If wet areas cannot be avoided, Western will use wide-track or balloon tire vehicles and equipment or timber mats.	Western/Contractor
31	To minimize impacts to soils and wetlands, mechanical clearing of vegetation will be prohibited within 100 feet of a wetland during the wet season (July 1 to September 30 and December 1 to March 31).	Western/Contractor
32	All equipment will be stored, fueled, and maintained a minimum of 300 feet from a stream or wetland. If equipment is fueled and/or maintained within CNF boundaries, a spill kit with a minimum capacity of 40 gallons will be required on-site where refueling/equipment maintenance activities occur.	Western/Contractor

Table 2-2. Project Conservation Measures by Resource		
PCM #	**Description**	**Responsible Party**
Visual Resources		
33	Material storage and staging areas will be selected to minimize views from public roads, trails, and nearby residences, to the extent feasible. During vegetation management and right-of-way maintenance activities, the work site will be kept clean of debris and management and maintenance waste. For areas where slash and vegetation debris will be visible from sensitive viewing locations, materials will be disposed of in a manner that is not visually evident, in coordination with CNF, and in compliance with the BA.	Western/Contractor/CNF
34	Vegetation management and right-of-way maintenance activities will be conducted in a manner that limits unnecessary scarring or defacing of the natural surroundings to preserve the natural landscape to the extent possible. To preserve vegetative screening from public areas, understory vegetation clearing will be minimized to the extent practicable along state highways and near recreation sites, and wherever possible along scenic roadways.	Western/Contractor
Cultural Resources		
35	Prior to conducting planned vegetation clearing within the boundaries of a known cultural site, Western would prepare a Monitoring Plan detailing procedures for cultural resource training, monitoring, reporting, and procedures for addressing unanticipated discoveries. This plan would be submitted to CNF, SHPO, and interested Tribes for review and concurrence.	Western/Contractor/SHPO
36	Vehicles and equipment will be staged outside of cultural resource sites.	Western/Contractor
37	Only the following activities are allowed in cultural sites: vehicular travel will only take place on existing roads, manual cutting of vegetation, and disposal of cut vegetation consistent with Western and CNF management guidelines.	Western/Contractor
38	No ground disturbing activities will occur within the boundaries of cultural sites.	Western/Contractor
39	A Western- and CNF-approved archeological monitor will be present when vegetation removal occurs within the boundaries of sensitive cultural sites, including those containing petroglyphs or standing historic or prehistoric architecture, or other sites designated as sensitive by the CNF.	Western
40	Where danger trees are removed outside of the right-of-way, trees will be felled to avoid any identified cultural resource sites. If a danger tree cannot be felled to avoid an identified cultural site, felled trees must be lopped and left in place as slash in accordance with the requirements of the BA and BO (2008).	Western/Contractor
Geology & Soils		
41	Upon completing ground-disturbing work, all work areas will be left in a condition that facilitates proper drainage, and minimizes erosion.	Western/Contractor
42	All operations and maintenance activities will be in conformance with Western's Integrated Vegetation Management Environmental Guidance Manual	Western/Contractor
43	Where soil has been severely disturbed and the establishment of vegetation will be needed to minimize erosion, appropriate measures, as approved by the CNF, will be implemented to establish an adequate cover of native grass or other native vegetation as needed. Perennial vegetation is preferred to annual vegetation. All mulch and seed will be certified free of noxious weeds.	Western/Contractor/CNF

Table 2-2. Project Conservation Measures by Resource		
PCM #	**Description**	**Responsible Party**
44	Disturbance and removal of soils and vegetation will be limited to the minimum area necessary for vegetation management and right-of-way maintenance activities.	Western/Contractor
Air Quality		
45	All requirements of those entities having jurisdiction over air quality matters will be adhered to, any necessary dust control plans will be developed, and permits for construction activities will be obtained.	Western/Contractor
46	Machinery and vehicles will be kept in good operating condition and older equipment will be replaced with equipment meeting Arizona emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per EPA, and Western air-emission requirements. Trucks transporting loose material will be covered or maintain at least 2 feet of freeboard and will not create any visible dust emissions.	Western/Contractor
47	Idle equipment will be shut down when not in active use.	Western/Contractor
48	Fugitive dust will be minimized during vegetation management and right-of-way maintenance activities to the extent practicable (e.g., adhering to speed limits, minimizing blading activities, etc.)	Western/Contractor
Land Use		
49	Western will post proper signage in areas requiring temporary closure or limited access due to vegetation management and right-of-way maintenance activities.	Western
50	No mechanical vegetation removal methods will occur within Wilderness Areas	Western/Contractor
Noise		
51	All vehicles and equipment will be equipped with required exhaust-noise-abatement devices.	Western/Contractor
Recreation		
52	Western will direct members of the public to alternate trails or recreation areas if blocked by machinery or for safety purposes.	Western/Contractor
53	Closure of recreation areas will be minimized to the extent practicable during weekends and Federal holidays between Memorial Day and Labor Day.	Western/Contractor/CNF
Public Health & Safety		
54	Signs and/or flags will be erected in areas of public access to indicate vegetation management and right-of-way maintenance activities are taking place; workers will be conspicuous by wearing high-visibility vests and hardhats.	Western/Contractor

Table 2-2. Project Conservation Measures by Resource		
PCM #	**Description**	**Responsible Party**
55	With regard to hazardous materials: • Hazardous materials will not be drained onto the ground, into streams, or into drainage areas. • Any release, threat of release, or discharge of hazardous materials within the project area in connection with project activities will be cleaned up and/or remediated, in accordance with applicable federal, state, and local regulations. • All construction waste, including trash and litter, other solid waste, petroleum products, and other potentially hazardous material will be removed in accordance with applicable federal, state, and local regulations. • Discovery of, or the accidental discharge of, a significant amount of hazardous materials will be immediately reported to Western's dispatch center. • There will be no storage of hazardous materials in the project area without approval from the Western authorized officer. • Upon termination of the permit, a report will be submitted to determine whether there had been site contamination and if so, that the remediation met compliance with applicable laws.	Western/Contractor
56	Hazardous materials standard operating procedures and applicable PCMs will be written into the contract for vegetation management and right-of-way maintenance work, and contractors will be held responsible for compliance.	Western/Contractor
57	Contractors must submit a spill response plan that is approved by Western. Clean-up actions and costs resulting from contractor misconduct will be the responsibility of the contractor.	Western/Contractor
Transportation		
58	All lane closures or obstructions on major roadways associated with maintenance activities will be restricted to off-peak periods to minimize traffic congestion and delays, and will be coordinated with Arizona Department of Transportation (ADOT).	Western/Contractor

SECTION 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This section provides discussion and disclosure of the potential adverse effects of the Proposed Action and No Action alternative. The potential adverse effects are examined as they relate to the following 14 issue areas:

- Biological Resources
- Cultural Resources
- Land Use
- Recreation
- Wildland Fire
- Visual Resources
- Water Resources
- Geology and Soils
- Public Health and Safety
- Air Quality
- Noise
- Transportation
- Socioeconomics
- Environmental Justice

3.2 ENVIRONMENTAL ASSESSMENT METHODOLOGY

Within each resource identified above, a description of the existing affected environment is provided. Potential adverse effects were assessed based on a comparison of potential changes to the affected environment resulting from the implementation of the Proposed Action for each resource evaluated for the Project. The impact analysis assumes that all PCMs (Table 2-2) would be implemented as committed to by Western. The description of the environmental consequences for each section takes into account both of the primary components of the Proposed Action; namely, the initial vegetation removal activities and the vegetation management and right-of-way maintenance activities.

3.3 BIOLOGICAL RESOURCES

3.3.1 Introduction

This section provides discussion and disclosure of the potential effects of the Proposed Action and No Action alternative. The potential adverse effects are examined as they relate to plant communities, special-status plants, wildlife, and special-status wildlife species.

3.3.2 Plant Communities

3.3.2.1 Affected Environment

A variety of vegetation and wetland types occur within the Project area. The vegetation communities were categorized using results from the Forest Service Southwestern Region Terrestrial Ecosystem Surveys. Shapefiles of these data were provided by the CNF. These vegetation communities are considered to be potential natural vegetation types (PNVT), which "represent the vegetation type and characteristics that would occur when natural disturbance regimes and biological processes prevail" (USFS 2008). These community types were utilized in the development of the BA for Phase II Maintenance in Utility Corridors on Arizona Forests (see Section 1.1). As this BA is applicable to the Proposed Action, these community types will be used in this analysis.

Ten plant communities are located within the Project area. Table 3-1 provides the approximate acreage within the Project area occupied by each community type. A brief description of each community is provided below.

Table 3-1. Plant Communities within the Project Area

Plant Community	Acres
Mixed Broadleaf Deciduous Riparian Forest	1
Mixed Conifer with Aspen	8
Cottonwood Willow Riparian Forest	10
Wetland/Cienega	25
Montane/Subalpine Grassland	35
Semi-desert Grasslands	175
Great Basin Grassland	470
Piñon-Juniper Evergreen Shrub	810
Piñon-Juniper Woodland	1,280
Ponderosa Pine	1,770
TOTAL	**4,584**

Mixed Broadleaf Deciduous Riparian Forest

Mixed broadleaf deciduous riparian forests are found along rivers and streams at elevations ranging from 4,000 to 9,000 feet. The vegetation is a mix of riparian woodlands and shrublands with a variety of vegetation associations. Within the Project area, this PNVT is only located along Clover Creek in a canyon approximately 550 feet below the existing transmission lines.

Mixed Conifer with Aspen

Mixed conifer with aspen is found at elevations between 5,000 and 10,000 feet and may be situated between ponderosa pine, pine-oak, or piñon-juniper woodlands. In the vicinity of the Project area, this PNVT is completely surrounded by ponderosa pine forest and piñon-juniper woodlands. Dominant and codominant vegetation varies with elevation and moisture availability. In the lower and drier elevations, Gambel oak (*Quercus gambelii*) and ponderosa pine (*Pinus ponderosa*) may codominate. In higher, more mesic areas, ponderosa pine may codominate with

Douglas-fir (*Pseudotsugo mensiesii*) and white fir (*Abies concolor*). Within the Project area, this PNVT is only located on the southeast side of Hutch Mountain near Boondock Tank.

Cottonwood Willow Riparian Forest

Cottonwood willow riparian forests are typically found at lower elevations along rivers and streams in unconstrained valley bottoms. Dominant wood species include cottonwood species (*Populus* spp.), willow species (*Salix* spp.), and mesquite species (*Prosopis* spp.). This PNVT is frequently subjected to heavy grazing, resulting in degradation. Additionally, invasive species such as salt cedars (*Tamarix* spp.) and Russian olive (*Elaeagnus angustifolia*) can be found in these areas and may result in depletion of the water table. The vegetation within cottonwood willow riparian forests is dependent upon seasonal flooding and high water tables for germination, growth, and survivorship of the woody dominants. This PNVT is only found where the alignments cross Fossil Creek, near the southern end of the Project area.

Wetland/Cienega

This PNVT is associated with perennial springs or headwater streams where groundwater intersects the surface to create pools of standing water. Soils in these areas may be highly saline. Species of vegetation varies based on soil saturation and salinity. Some species may include salt grass (*Distichlis spicata*), yerba mansa (*Anemopsis californica*), and sacaton (*Sporobolus airoides*). Highly saturated areas may support vegetation such as rushes and sedges, and deep pools may support aquatic species. This PNVT may occur over elevations ranging from 3,500 to 11,000 feet. The Project area crosses three wetland/cienegas. Two are located along Forest Road (FR) 124H north of Hutch Mountain. The other is located south of FR 125 and is designated as Camillo Tank.

Montane/Subalpine Grassland

This PNVT occurs at elevations ranging from 8,000 to 11,000 feet. Montane/subalpine grasslands may contain several plant associations with varying dominant grasses and herbaceous species. Dominant species may include Parry's oatgrass (*Danthonia parryi*), Arizona fescue (*Festuca arizonica*), Thurber's fescue (*Festuca thurberi*), pine dropseed (*Blepharoneuron tricholepis*), Kentucky bluegrass (*Poa pratensis*), Rocky Mountain iris (*Iris missouriensis*), Parry's bellflower (*Campanula parryi*), and bulrush species (*Scipus* and/or *Schoenoplectus* species). Some shrubs may also be present. These grasslands may be seasonally wet as a result of snowmelt, but rarely experience flooding events. The Project area crosses several small patches of montane/subalpine grassland.

Semi-desert Grasslands

Semi-desert grasslands are dominated by grassland associations/types such as black grama (*Bouteloua eriopoda*) grassland, blue grama (*Bouteloua gracilis*) grassland, tobossa (*Hilaria mutica*) grassland, mixed native perennial grassland, and non-native perennial grassland. Shrubs may also be found within this PNVT with variable density and species composition. Within the

Project area, these grasslands are only found between the Verde River and Fossil Creek along the most southern 6 miles of the alignments.

Great Basin Grassland

Great Basin grasslands tend to occur at lower elevations with vegetation coverage consisting primarily of grasses and interspersed shrubs. Grass species may include Indian ricegrass (*Achnatherum hymenoides*), threeawn species (*Aristida* spp.), blue grama (*Bouteloua gracilis*), and fescue species (*Festuca* spp.). Shrubs may include sagebrush (*Artemesia tridentata* spp.), saltbush (*Atriplex* spp.), and winterfat (*Krascheninnikovia lanata*). Within the Project area, Great Basin grasslands tend to occur in large contiguous clusters. The majority of this PNVT is located in the vicinity of Mormon Lake and in the northernmost 2 miles of the alignments.

Piñon-Juniper Evergreen Shrub

Piñon-juniper evergreen shrub is typically found on lower slopes in transition zones between interior chaparral and montane forests. This PNVT often contains the two-needle piñon (*Pinus edulis*), singleleaf piñon (*Pinus monophylla* var. *fallax*), Utah juniper (*Juniperus osteosperma*), or alligator juniper (*Juniperus deppeana*). Coexisting shrub species may include manzanita species (*Arctostaphylos* spp.), mountain mahogany (*Cercocarpus montanus*), antelope bushes (*Purshia* spp.), and sumacs (*Rhus* spp.). Piñon-juniper evergreen shrub is the dominant vegetation type throughout the southernmost 22 miles of the Project area.

Piñon-Juniper Woodland

This PNVT primarily occurs on lower slopes of mountains and in upland rolling hills at elevations ranging from 4,500 to 7,500 feet. The most common piñon pine is the two-needle piñon (*Pinus edulis*), with singleleaf piñon (*Pinus monophylla*) occurring in limited areas. One-seed juniper (*Juniperus monosperma*) is most common in Arizona. Some areas may contain Utah juniper (*Juniperus osteosperma*) and Rocky Mountain juniper (*Juniperus scopulorum*). Grasses, forbs, and shrubs may be found underneath the woodland canopy. Piñon-juniper woodland is found extensively throughout the Project area north of Mormon Lake.

Ponderosa Pine Forest

Ponderosa pine forests occur at elevations ranging from 6,000 to 9,000 feet on igneous, metamorphic, and sedimentary parent soils with good aeration and drainage. As indicated by its name, this community is dominated by ponderosa pine (*Pinus ponderosa*). Other trees may be present, including Gambel oak (*Quercus gambelii*), piñon pine (*Pinus edulis*), and juniper species (*Juniperus* spp.). The understory is typically shrubby with a mixture of grasses and forbs. This system is adapted to drought during the growing season and has evolved mechanisms to tolerate frequent, low intensity surface fires. This PNVT occupies the largest portion of the Project area, and is found throughout the Project area north of Arizona State Route (SR) 260.

Within the areas designated as ponderosa pine forest, there is an area in which the ground is covered with volcanic cinders. This area is located in the vicinity of Sunset Crater Volcano National Monument, and extends from the south side of Deadman Mesa to approximately FR

505. On these cinder hills, herbaceous vegetation is less dense than in surrounding areas, as the soil is covered by 2 to 4 inches of volcanic debris.

3.3.2.2 Environmental Consequences

Several types of vegetative and wetland communities occur within the Project area, as described in the previous section. Western must manage the vegetation throughout its system to comply with federal laws, regulations, and directives, including those for maintaining system reliability and public and worker safety. The following sections identify potential impacts to vegetation resulting from vegetation removal, and vegetation management and right-of-way maintenance activities. PCMs to minimize potential impacts to vegetation are also discussed.

Impacts Resulting from Initial Vegetation Removal

Activities related to initial vegetation removal would have an impact on vegetation. As stated in Section 1.3, all vegetation within the 300-foot right-of-way areas was removed and/or altered from its natural state during the construction process in the 1960s. Since that time, successional vegetation growth has occurred within the rights-of-way, resulting in large woody species such as trees to reinhabit the right-of-way. Most of the current vegetation would be removed throughout the rights-of-way, resulting in a change of the mid-late seral to subclimax successional status of the Project area to a pre-successional condition. This change would be permanent until the transmission lines are decommissioned. It is anticipated that this impact would not ultimately result in an irretrievable loss of resources. As has been exhibited in the relatively short span of time since construction of these transmission lines, the large woody species and natural succession would ultimately reclaim the right-of-way area after decommissioning of the Project.

Impacts Resulting from Vegetation Management and Right-of-Way Maintenance

Vegetation management is anticipated to occur on a 5-year cyclical basis throughout the entire Project area. However, the majority of danger tree management would be required in tree-dominated PNVTs such as ponderosa pine and piñon-juniper evergreen shrub. Table 3-2 shows the number of danger trees identified by Western through LIDAR data located within each PNVT in the Project area.

The primary impacts resulting from both mechanical and manual methods of vegetation management and danger tree removal could include disturbance to surrounding non-target vegetation (e.g., trees falling on vegetation outside the right-of-way), sensitive plant communities such as riparian habitats or wetlands, special-status plants, trees that should remain in place, and local alteration of vegetation type within Westerns rights-of-way through changes to density and species composition.

Vegetation management may also affect wetlands and riverine habitats. These areas are susceptible to erosion and compaction from heavy machinery. Removal of vegetation in upland areas can increase surface runoff, resulting in sedimentation of wetlands and aquatic habitats.

Table 3-2. Danger Trees within Each Plant Community		
Plant Community	**Acres**	**# of Danger Trees**
Mixed Broadleaf Deciduous Riparian Forest	1	0
Mixed Conifer with Aspen	8	<10
Cottonwood Willow Riparian Forest	10	<10
Wetland/Cienega	25	26
Montane/Subalpine Grassland	35	0
Semi-desert Grasslands	175	158
Great Basin Grassland	470	130
Piñon-Juniper Evergreen Shrub	810	1,905
Piñon-Juniper Woodland	1,280	293
Ponderosa Pine	1,770	7,053
TOTAL	**4,584**	**9,572**

Impacts would be minimized through implementation of PCMs presented in Section 2. These efforts would include containment of debris to reduce the potential for this material to contaminate wetlands and waterways in the vicinity. Additionally, sites would be assessed to determine whether mechanical or manual maintenance methods should be applied to minimize impacts in sensitive areas.

It is anticipated that impacts to vegetation would exist until the transmission lines are decommissioned. Without routine vegetation management through manual or mechanical treatments, the area would revert to its natural state through successional regrowth.

Impacts Resulting from the Spread of Noxious Weeds of Invasive Plant Species

No known noxious weed hotspots are located within the Project area; however, maintenance efforts may contribute to the spread of noxious weeds and invasive plant species. Removal of late-successional, woody species may promote the invasion of non-native, invasive species that can out-compete native species. Western is required to comply with the Federal Noxious Weed Act of 1974, as amended (7 USC 61). Under Section 2814, Management of Undesirable Plants on Federal Lands, each federal land-management agency is required to:

- designate a lead office and person trained in the management of undesirable plant species
- establish and fund an undesirable plant management program
- complete and implement cooperative agreements with state agencies
- establish integrated management systems to control undesirable plant species

As provided in Section 2 of this EA and the BA, PCMs have been established to minimize impacts from noxious and invasive weeds. Any utility mowers, tracks, or other off-road equipment would be free of soil, weeds, vegetative matter, or other debris that could harbor seeds prior to entering the Project area. In addition, the appropriate Ranger District should notify Western of new or existing noxious weed hotspots. Should any hotspots be identified, vehicles would be free of soil, weeds, vegetative matter, or other debris that could harbor seed prior to moving the equipment between line segments.

3.3.2.3 Environmental Consequences from the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Impacts under this alternative would likely be similar to the Proposed Action; however, the impacts would be spread out over time. Maintenance activities would be reactive, resulting in vegetation removal occurring when growth has reached a hazardous condition for continued operation.

3.3.3 Special-Status Plants

3.3.3.1 Affected Environment

For the purposes of this document, special-status species are defined as those plants whose geographic range and native habitats overlap with the Project area and that are:

- federally or state-listed, proposed for listing, or candidates for listing as threatened or endangered
- listed as sensitive by the USFS within the CNF

Table 3-3 lists the special-status plants known to occur within the Project area, including the vegetation community type in which each species occurs. None of these species is listed as endangered or threatened and, therefore, does not have any designated critical habitat.

Table 3-3. Special-Status Plant Species within the Project Area

Species Name	Status	Vegetation Community Type	Blooming Period
Cinder Phacelia (*Phacelia serrata*)	SOC	Ponderosa Pine – Volcanic Cinders	Late June to mid-September
Five Scale Bitterweed (*Hymenoxys quinquesquamata*)	SOC	Piñon-Juniper Woodland and Wetland/Cienega	July-September
Sunset Crater Beardtongue (*Penstemon clutei*)	SOC, USFS	Ponderosa Pine – Volcanic Cinders	April-August

SOC – USFWS Species of Concern
USFS – Forest Service Sensitive Species

Cinder Phacelia (*Phacelia serrata*)

Cinder phacelia is an annual with glandular and sticky leaves. Individuals are 4.0 to 13.4 inches in height. The species produces blue to light violet flowers from late June to mid-September. Cinder phacelia inhabits deep volcanic cinders associated with volcanic cones near ponderosa pine and piñon-juniper woodlands (Arizona Game and Fish Department [AZGFD] 2004; New Mexico Rare Plant Technical Council [NMRPTC] 2005). All known occurrences of this species within the CNF are located north of I-40. The only known occurrence of this species within the Project area is at the southeast corner of the Cinder Hills off-highway vehicle (OHV) area.

Five Scale Bitterweed (*Hymenoxys quinquesquamata*)

Five scale bitterweed is a perennial branched from a single woody stem. It produces flowers with yellow discs and rays from July through September. It is primarily known from open areas along the edges of pine-oak forests at elevations ranging from 5,000 tp 8,200 feet (Kleinman 2011; Bierner 2006). A single occurrence for this species is known from the CNF within the Project area near Potato Lake, approximately 1.5 miles north of Ashurst Lake.

Sunset Crater Beardtongue (*Penstemon clutei*)

Sunset Crater beardtongue is a perennial herb found in cinder fields with a layer of volcanic ash-cinder, 2 to 4 inches thick over a layer of silty soil. Other herbaceous vegetation is scarce in these areas. The species is found at elevations between 6,100 and 8,500 feet. It produces deep pink or rose-purple flowers from April to August (AZGFD 2003a). There are no known occurrences within the Project area; however, there are four occurrences within 0.25 mile, all located along the eastern edge of the Cinder Hills OHV Area. The Project area in this location contains potentially suitable habitat for this species, indicating that it may be present despite the lack of documented occurrences.

3.3.3.2 Environmental Consequences

Within the Project area there are three sensitive plant species with known occurrences. A significant impact on special-status plant species would result if any of the following were to occur:

- loss of individuals of a population of species
- adverse modification of critical habitat, to the degree it would no longer support the species for which it was designated

Under the Proposed Action, the removal of vegetation could affect special-status species, regardless if mechanical or manual methods were utilized. Individual plants could be trampled or otherwise damaged during vegetation maintenance operations. In an effort to minimize this possibility, in areas of known occurrences or suitable habitat, a botanist would identify and flag plants to be avoided. Methods of vegetation removal would be altered as appropriate to avoid impacts to special-status plant species.

As all three species are known to occur in open areas within woodlands, it is not anticipated that removal of trees or other large vegetation will have a long-term detrimental impact to the habitat for these species or curtail their populations.

3.3.3.3 Environmental Consequences from the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Impacts under this alternative would likely be similar to the Proposed Action; however, the impacts would be spread out over time. Maintenance activities would be reactive, resulting in vegetation removal occurring when growth has reached a hazardous condition for continued operation.

3.3.4 Wildlife

The Project area crosses approximately 90 miles of the CNF and numerous vegetation types. As a result, wildlife species may be impacted due to implementation of the Proposed Action. This section addresses impacts to wildlife species that are not protected under state or federal laws or regulations. Section 3.3.5 addresses special-status wildlife.

Information for this analysis was gathered through a literature review, and was provided by biologists from the AZGFD and CNF.

3.3.4.1 Affected Environment

A variety of wildlife species inhabit the CNF. These species range from rodents and lizards to big game and upland game species. All of Arizona's native wildlife, including threatened and endangered species, is protected under the general provisions of Arizona Revised Statutes (A.R.S.), Title 17. It is illegal to *take* wildlife unless authorized by the Arizona Game and Fish Commission. *Take* is specifically defined under A.R.S. § 17-101 to mean "pursuing, shooting, hunting, fishing, trapping, killing, capturing, snaring or netting wildlife or the placing or using of any net or other device or trap in a manner that may result in the capturing or killing of wildlife."

General wildlife that may be found within the Project area includes:

- Mammals such as pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), black bear (*Ursus americanus*), porcupine (*Erethizon dorsatum*), badger (*Taxidea taxus*), and coyote (*Canis latrans*)
- Raptors such as peregrine falcons (*Falco peregrinus*), American kestrels (*Falco sparverius*), and red-tailed hawks (*Buteo jamaicensis*)
- Woodland birds such as Stellar's jay (*Cyanocitta stelleri*), northern flicker (*Colaptes auratus*), pygmy nuthatch (*Sitta pygmaea*), and hairy woodpecker (*Picoides villosus*)
- Reptiles and amphibians such as Woodhouse toad (*Bufo woodhouseii*), tiger salamander (*Ambystoma tigrinum*), chorus treefrog (*Pseudacris triseriata*), and common kingsnake (*Lampropeltis getula*)
- Sport fish such as Apache trout (*Oncorhynchus gilae apache*) and roundtail chub (*Gila robusta*)

Management Indicator Species

Management Indicator Species (MIS) are identified in the land and resource management plans (RMP) of each national forest, and are generally identified to represent habitat types that occur within the national forest boundary and/or because they are thought to be sensitive to the national forest system management activities. The CNF currently identifies 17 species as MIS. Some of the species included in this list are assessed below as Special-Status Species such as Mexican spotted owl and northern goshawk. During the public scoping phase of this Project, two MIS were specified by the AZGFD and the USFWS as being of primary concern for the Project area, and have been included in this analysis: wild turkey (*Meleagris gallopavo*) and pronghorn (*Antilocapra americana*).

Wild turkey primarily inhabits oak woodlands and pine-oak forests. They are nonmigratory and strongly social. Individuals spend most of the daylight hours on the ground and roost in trees at night to avoid predation (Eaton 1992). Within the CNF, the subspecies of turkey known as Merriam's wild turkey is found. This subspecies primarily inhabits ponderosa pine forests (AZGFD 2009).

Pronghorn (often referred to as antelope) are found throughout the American West. Pronghorn inhabit grasslands and shrublands of the plains and desert. Females tend to produce twin fawns in early June (Whitaker 1996; Smithsonian National Museum of Natural History 2011).

3.3.4.2 Environmental Consequences

Impacts to wildlife could occur when habitats or individuals are disturbed or lost during Project-related activities. The significance of the impact depends, in part, on the sensitivity of the population.

Managing vegetation along the Project area has the potential to affect wildlife. Individuals may be directly harmed and habitat may be lost, fragmented, or degraded. Additionally, adverse impacts may occur from the direct loss of life through disruption of breeding and consequent loss of eggs, chicks, or fledglings, through collision mortality on roads, or through direct contact with mechanical equipment.

Habitat Loss and Degradation

Forests have become less resilient to natural disturbances as a result of fire suppression, cattle grazing, timber production, and human habitation in and around forests during the previous 100 years. Due to these impacts, the pine forests of the Southwest have become more dense with small diameter trees (Covington and Moore 1994), making the area more susceptible to large, severe wildfires (Swetnam and Betancourt 1998).

Relative to the size and limits of the right-of-way, a significant amount of habitat has already been lost or modified over the years through implementation of Western's current vegetation management procedures (see Section 1.4). The transmission lines were constructed in the 1960s. Given this, the faunal assemblage in the immediate vicinity of the Project area consists of those species that are supported by modified habitat conditions and associated human activities. Wildlife that is highly sensitive to human disturbance has likely permanently moved away from the existing right-of-way. Similarly, animals that tend to avoid openings will no longer use the right-of-way and animals that prefer openings will have their habitats somewhat improved through the Proposed Action.

The Proposed Action is designed to create permanent changes in habitat conditions through conversion of existing conditions to stable, low-growing vegetation communities. This requires short-term disturbance to create long-term reductions in the need for vegetation removal and, therefore, reduces disturbance to local wildlife.

Mechanical vegetation removal would be the predominant treatment for the Project (see Section 2.1.1.1, Vegetation Removal Methods); however, manual vegetation removal methods would also be implemented where required (e.g., terrain, environmental resource constraints, etc.). In

general, grasses would not be cut unless they are in areas with taller woody vegetation that would be mowed or masticated. Immediately following vegetation management activities, grasses and shrubs may be shorter than preferred by species such as turkey and pronghorn. However, these are fast-growing vegetation species. It is anticipated that impacts would be temporary and wildlife would utilize these areas again for fawning and grazing.

Habitat Fragmentation

While openings and habitat edges are beneficial for some wildlife (such as raptors), openings also fragment habitats. Habitat fragmentation creates a greater number of small habitat patches. Smaller patches may not have the same attributes and characteristics as more contiguous tracts of habitat. Fragmentation of primary habitat types can hinder regional wildlife movements, potentially resulting in reduced interaction between individuals and changes to long-term population dynamics.

Some species may benefit from the fragmentation of habitat. Many raptors hunt for prey along habitat edges. However, prey species are more vulnerable due to reduced cover. Species such as turkeys are less likely to move through areas of low vegetation. Pronghorn may still use areas for foraging, but fawning areas would be reduced.

Habitat within the Project area has been previously disturbed and degraded to varying degrees through past management practices. As such, the Proposed Action is not likely to exacerbate the impacts of habitat fragmentation that have already occurred.

3.3.4.3 Environmental Consequences from the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Impacts under this alternative would likely be similar to the Proposed Action; however, the impacts would be spread out over time. Maintenance activities would be reactive, resulting in vegetation removal occurring when growth has reached a hazardous condition for continued operation. It should be noted that this reactive management would not allow for avoidance of breeding seasons for migratory birds and other species, because of emergency situations created by the imminent threat of danger trees.

3.3.5 Special-Status Wildlife

This section presents a description of special-status wildlife resources that could occur within the Project area, and an assessment of the potential impacts to wildlife that could occur from implementation of the Proposed Action and No Action alternative. Information presented in this section is based on data gathered through a literature review, and was provided by biologists from the AZGFD and USFWS.

For purposes of this document, special-status wildlife species are defined as those animals (invertebrates, fish, amphibians, reptiles, birds, and mammals) whose geographic range and native habitats overlap with the Project area and that are:

- federally or state-listed, proposed for listing, or candidates for listing as threatened or endangered
- listed as sensitive by the USFS

3.3.5.1 Affected Environment

Table 3-4 lists the special-status wildlife considered in this document. This list was compiled with the assistance of the USFWS and AZGFD, and represents special-status species and/or critical habitat known to occur within 0.25 mile of the Project area.

Fish

There are eight special-status fish species with known occurrences and/or designated critical habitat within the Project area (Figure 3-1 and Figure 3-2). These locations are limited to the Verde River and Fossil Creek.

Razorback Sucker

The portion of the Verde River within the Project area has been designated as Critical Habitat for the razorback sucker. The razorback sucker was listed as endangered on October 23, 1991. This species was once abundant throughout the Colorado River system, but has declined in recent decades. On March 21, 1994, Critical Habitat was designated for the razorback sucker along 15 reaches of the Colorado River system, totaling 1,724 miles of waterways. The Verde River was designated Critical Habitat from the boundary of Prescott National Forest (Township 18N, Range 2E, Section 31) to Horseshoe Dam at the Yavapai and Maricopa County lines (59 FR 13374-13400). In 2004, the USFS, BOR, USFWS, AZGFD, and APS worked together to restore native fish populations to Fossil Creek. Fossil Creek was stocked with razorback suckers as a part of that effort.

Gila Topminnow

The Gila topminnow is the only endangered species with a known occurrence with 0.25 mile of the Project area. This species was included on the original Endangered Species List published on March 11, 1967 (32 FR 4001), under the Wilderness Act of 1964. The subspecies is currently under a 5-year review (72 FR 20134-20136). No critical habitat has been designated for this species. On May 17, 1982 in the CNF, Deep Spring, and Sheepshead Springs were stocked with Gila topminnow to aid in recovery of the species (Weedman 1998). The only known occurrence of this species within 0.25 mile of the Project area is at the gauging station immediately north of Stehr Lake.

Spikedace and Loach Minnow

The spikedace and loach minnow inhabit similar areas and, as a result, have typically been considered together in listing documents by the USFWS. The spikedace was listed as threatened on July 1, 1986, and the loach minnow was listed as threatened on October 28, 1986. Critical Habitat was designated for both species on April 25, 2000. On March 21, 2007, a revised Critical Habitat designation was published. On October 28, 2010, a proposal to reclassify both species as endangered was published in the Federal Register.

Table 3-4. Special-Status Species within 0.25 mile of the Project Area			
Species	**Group**	**Status**	**Vegetation Community Type**
Razorback Sucker [Critical Habitat] (*Xyrauchen texanus*)	Fish	LE	Water
Gila Topminnow (*Poeciliopsis occidentalis occidentalis*)	Fish	LE	Water
Loach Minnow [Critical Habitat] (*Tiaroga cobitis*)	Fish	LT	Water
Spikedace [Critical Habitat (*Meda fulgida*)	Fish	LT	Water
Roundtail Chub (*Gila robusta*)	Fish	C, USFS	Water
Gila Longfin Dace (*Agosia chrysogaster chrysogaster*)	Fish	SOC, USFS	Water
Desert Sucker (*Catostomus clarkii*)	Fish	SOC, USFS	Water
Sonora sucker (*Catostomus insignis*)	Fish	SOC, USFS	Water
Chiricahua Leopard Frog (*Rana chiricahuensis*)	Amphibian	LT	Cottonwood Willow Riparian Forest
Northern Leopard Frog (*Rana pipiens*)	Amphibian	USFS	Montane/Subalpine Grassland, Ponderosa Pine (Tank), Water
Mexican Spotted Owl [Critical Habitat] (*Strix occidentalis lucida*)	Bird	LT	Piñon-Juniper Evergreen Shrub, Ponderosa Pine, Mixed Conifer w/Aspen
Northern Goshawk (*Accipiter gentilis*)	Bird	USFS	Piñon-Juniper Evergreen Shrub, Ponderosa Pine, Mixed Conifer w/Aspen
Bald Eagle (*Haliaeetus leucocephalus*)	Bird	DL, USFS, BGEPA	Ponderosa Pine
Golden Eagle (*Aquila chrysaetos*)	Bird	BGEPA	Ponderosa Pine, Piñon-Juniper Evergreen Shrub, Mixed Broad Leaf Deciduous Riparian Forest, Cottonwood Willow Riparian Forest, Great Basin Grassland
LE – USFWS Listed Endangered LT – USFWS Listed Threatened C – Candidate		SOC – Species of Concern USFS – Forest Service Sensitive Species	

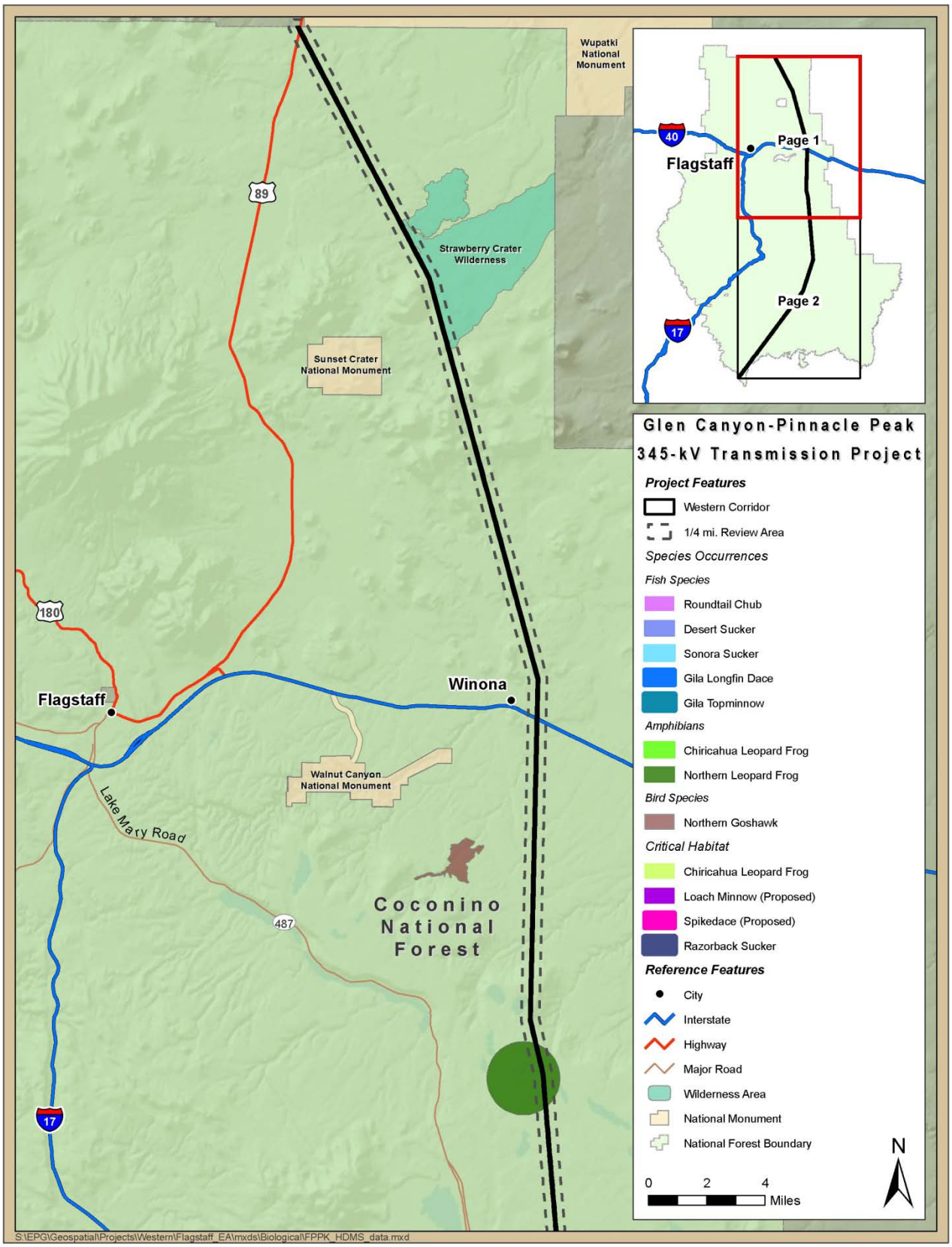

Figure 3-1. Project Area (Northern Half)

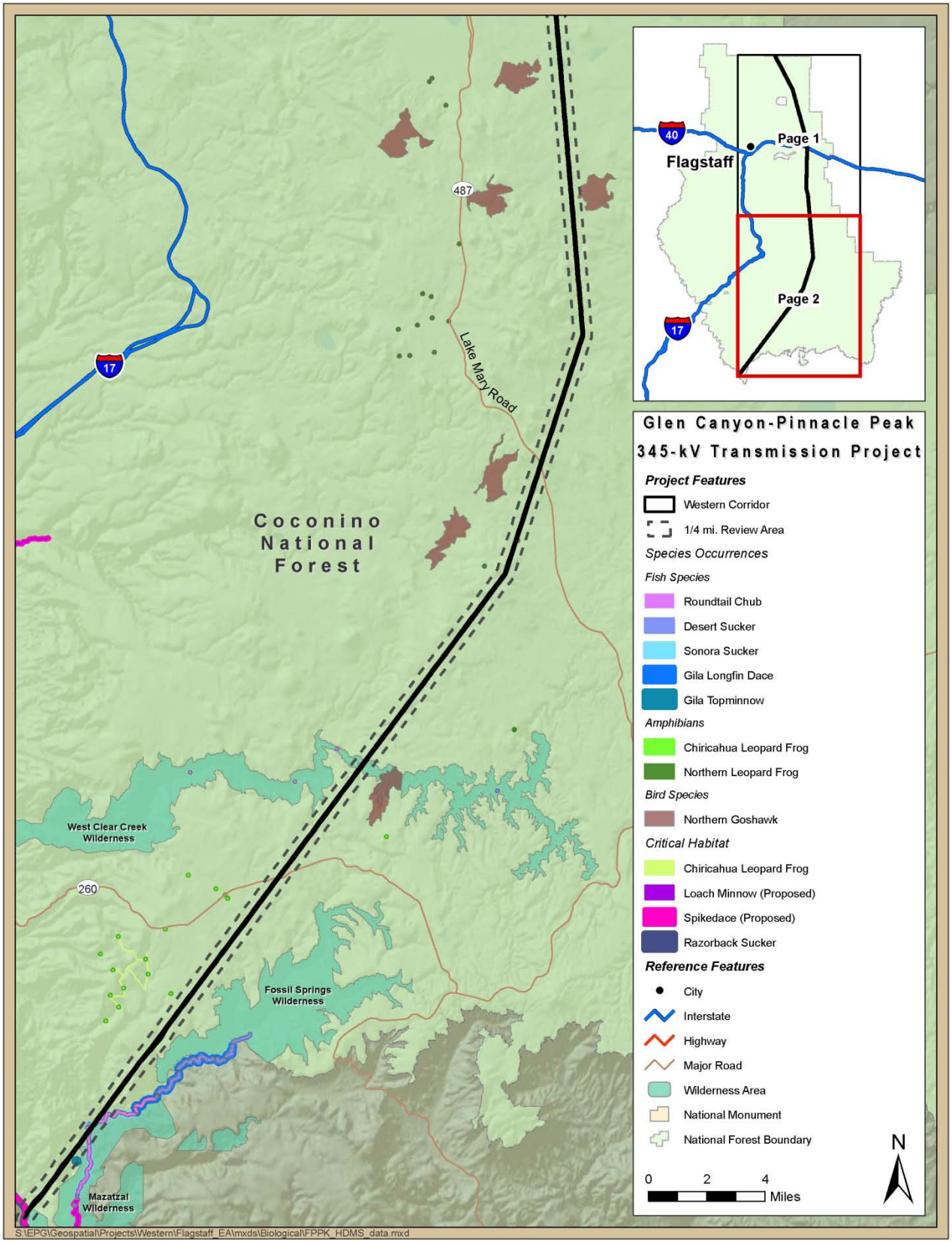

Figure 3-2. Project Area (Southern Half)

A proposed Critical Habitat designation of 726 miles of streams for spikedace and 709 miles of streams for loach minnow was included in this reclassification proposal. These Critical Habitat designations include portions of the Verde River and Fossil Creek at the confluence with the Verde River (75 FR 66482 – 66552). There are no confirmed loach minnow occurrences or Critical Habitat within the Project area. However, Critical Habitat for the loach minnow is designated in Fossil Creek approximately 2 miles downstream of the Project area. For the spikedace, this same portion of Fossil Creek is proposed as Critical Habitat as well as the Verde River. The Project area ends at the Verde River, placing this portion of Critical Habitat within it.

Roundtail Chub, Desert and Sonora Suckers, and Gila Longfin Dace

The roundtail chub is currently a candidate for listing under the Endangered Species Act. The desert sucker, Sonora sucker, and Gila longfin dace are all considered Species of Concern by the USFWS. All four of these species are considered sensitive species by the USFS and BLM. The roundtail chub is also covered under an Arizona Statewide Conservation Agreement (AZGFD 2006). Within the Project area, these species are known to occur within Fossil Creek.

Amphibians

Chiricahua Leopard Frog

The Chiricahua leopard frog was listed as a candidate species on November 21, 1991 (56 FR 58804-58836) and was ultimately listed as a threatened species on June 13, 2002 (67 FR 40790-40811). The species' listing contained a special rule exempting accidental take through livestock use and maintenance of stock tanks. The species is limited to wetlands, and eggs must remain submerged in water. On March 15, 2011, the USFWS published a proposed rule to designate Critical Habitat for the Chiricahua leopard frog. There is no proposed Critical Habitat for the Chiricahua leopard frog within the Project area. The Buckskin Hills Critical Habitat Unit is located approximately 1.5 miles from the Project area and encompasses Sycamore Basin tank, Middle Tank, Black Tank, Needed Tank, Buckskin Tank, Walt's Tank, Partnership Tank, and Doren's Defeat Tank (76 FR 14125-14207). Within the Project area there is a known occurrence of this species in Fossil Creek.

Northern Leopard Frog

The northern leopard frog is designated as a sensitive species by the USFS. This species is adapted to living in colder climates and can be found at elevations up to 11,000 feet; however, it is still highly dependent upon water. It may forage far from water in areas with damp soils and vegetation (Stebbins 2003). There are two known occurrences for this species within the Project area. One is in the immediate vicinity of Ashurst Lake, and the other is at the Bar D Tank located approximately 1 mile northeast of the Buck Mountain Lookout Tower.

Birds

Mexican Spotted Owl

The Mexican spotted owl was listed as a threatened species on March 16, 2003 (58 FR 14248-14271). Approximately 9.6 million acres of federal land in Arizona, New Mexico, Colorado, and

Utah were designated Critical Habitat for the Mexican spotted owl on August 31, 2001 (69 FR 53182-53298). The Mexican Spotted Owl Recovery Plan was completed in 1995; however, in June 2011, a draft revised recovery plan was made available for public review. The public comment period ends on August 23, 2011. It is unknown when the revised Recovery Plan will be finalized and implemented.

Under both the original and revised Recovery Plans, there are three categories related to land management: Protected Activity Centers (PAC), Recovery Habitat, and Other Forest and Woodland Types.

PACs are the most heavily managed for Mexican spotted owls and are defined as "the area of concentrated use by a single owl or pair of owls and provides a location for specific management actions." PACs are at least 600 acres in size with no limit to how large they can be. Within each PAC is a nest/roost core area, as they are designed to protect resident breeding owls (USFWS 2011).

Recovery Habitats are areas of forest and rocky canyons used by owls for various needs, but are outside of PACs. Recovery Habitat is "intended to (1) provide protection for areas that may be used by owls, (2) foster creation of replacement roost/nest habitat, and (3) simultaneously provide managers with greater management flexibility than is allowed in PACs" (*ibid*).

Other Forest and Woodland Types are areas that may be used for foraging and dispersal, but are unlikely to be used for nesting. No owl-specific management recommendations are made for these areas (*ibid*).

Mexican spotted owls are primarily cavity nesters that rely on large trees to nest and roost in. Recovery guidelines focus on retention of trees with a diameter at breast height of at least 24 inches. Emphasis is also placed on retention of large oaks over pines (*ibid*).

Critical Habitat is present within 0.25 mile of the Project area along two stretches of the alignment. The northernmost is an 11-mile segment that runs from FR 124D near Pouroff Tank, to where the alignment crosses FR 3 (Lake Mary Rd) approximately 2 miles south of Happy Jack. The southernmost is a 7-mile segment that runs from Island and Road Tanks (near the junction of FRs 81A and 755) to where the Project area crosses SR 260.

Within these areas of Critical Habitat, there are 8 PACs within 0.25 mile of the Project area (Figure 3-3). From north to south, the PACs that may potentially be impacted are Sawmill Springs, Spruce Tank, Powerline Tank, Boondock, Schell Springs, Cash, and Meadow Canyon. Of these, only Boondock, Cash, and Meadow Canyon have portions of their core area that may be impacted.

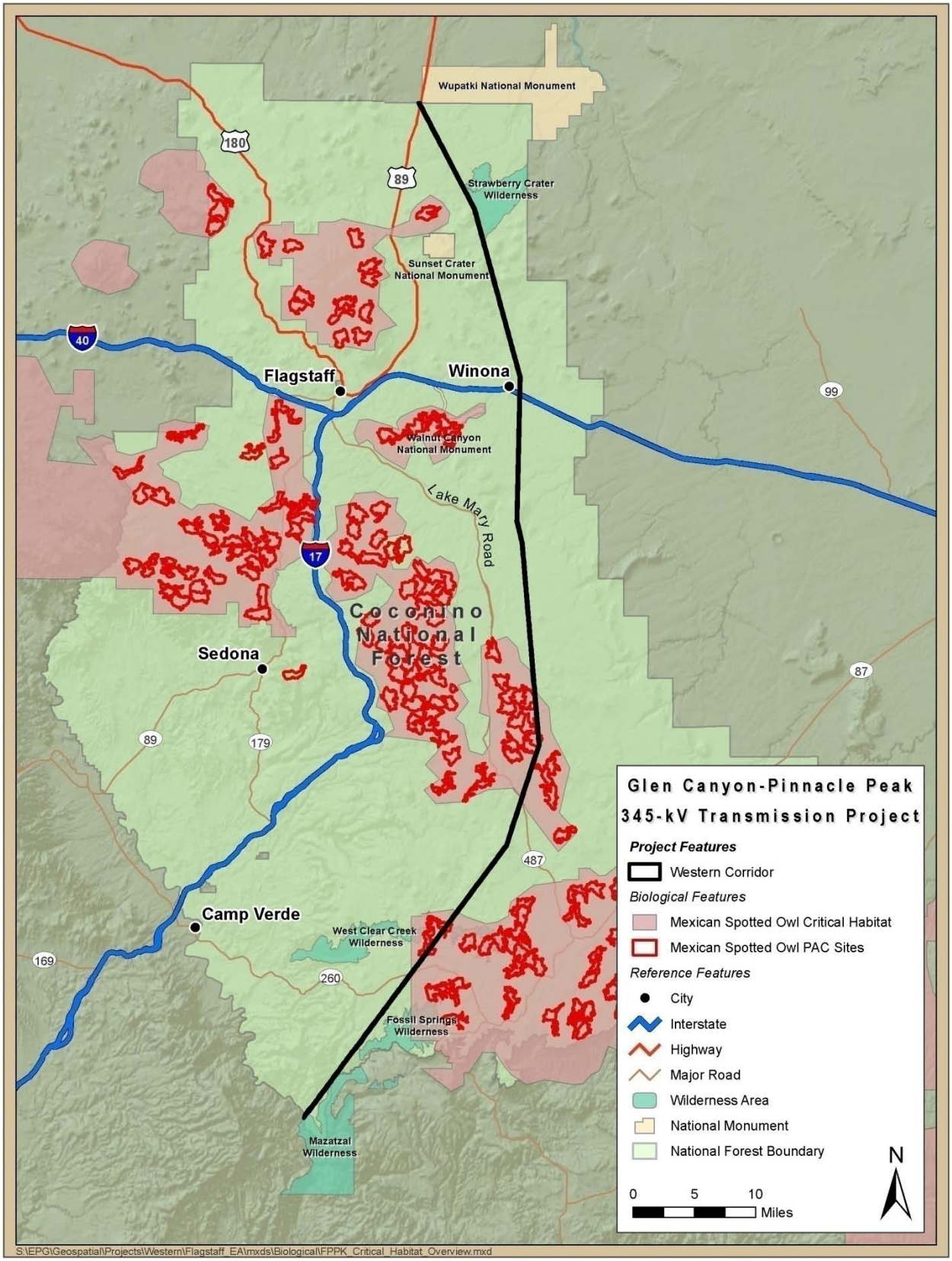

Figure 3-3. PAC Overview Map

Northern Goshawk

The northern goshawk is found throughout much of the northern hemisphere. Within Arizona, the species breeds in high, forested mountains and plateaus, typically above 6,000 feet in elevation. Nest building and breeding activities begin in March, with egg-laying in mid- to late-April. Young are independent by mid-July. Within the CNF, northern goshawks most commonly inhabit ponderosa pine forests (AZGFD 2003b). Within the Project area, there is only one known goshawk territory located within 0.25 mile of the Project area (see Figure 3-2).

Bald and Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 USC 668-668d). Under this Act, it is unlawful to possess or take eagles, eggs, or any part thereof. The bald eagle was included on the original endangered species list in 1967 (32 FR 4001). The species was ultimately delisted on July 9, 2007 (72 FR 37346-37372). A petition to list the Sonoran population of bald eagles was considered, but found to be unwarranted (75 FR 8601-8621). Golden eagles have never been listed under the Endangered Species Act.

Eagles may utilize the entire Project area throughout the year. The area may be utilized for foraging, roosting, and nesting. In the winter, bald eagles communally roost. Communal roosts are found in areas that provide protection from adverse weather conditions such as sheltered valleys, forested bottomlands, and coniferous trees (AZGFD 2010).

There are currently five bald eagle breeding areas within 10 miles of the Project area. Four of these areas are located along the Verde River. The East Verde Breeding Area is located 3.7 miles downstream from the Project area; the Coldwater Breeding Area is 4.7 miles upstream; the Ladders Breeding Area is approximately 8.5 miles upstream; and the Table Mountain Breeding Area is just over 10 miles downstream. The remaining breeding area is the Lower Lake Mary, located 8.7 miles from the Project area (personal communication, Jacobson 2011).

There have not been thorough surveys conducted for golden eagle nesting sites. The AZGFD intends to conduct helicopter-based golden eagle nest surveys throughout the area during upcoming winter and spring (2011/2012). Data available from the Heritage Data Management System was collected opportunistically and may include sites that are older and not currently active. There are 18 golden eagle nest occurrences within 10 miles of the Project area listed in the Heritage Data Management System. Four nests are within 1 to 2 miles of the Project area, four nests are within 3 to 4 miles, five nests are within 5 to 6 miles, four nests are within 6 to 8 miles, and one nest is 9.8 miles away.

3.3.5.2 Environmental Consequences

The Proposed Action has a greater potential to affect special-status wildlife than to affect general wildlife, due to the fact that these species are generally less tolerant of environmental changes. These changes can include habitat loss and degradation, habitat fragmentation, human presence, and noise.

Adverse impacts can be direct or indirect, temporary or permanent. Direct impacts result directly from Project-related activities on the landscape such as alteration, disturbance, or removal of

biological resources. Indirect impacts are unintentional consequences of Project-related impacts and may occur later in time. An example of an indirect impact could be increased nest parasitism as a result of habitat fragmentation. Permanent impacts are considered to be any impacts that would last for the life of the transmission line. Resources may be able to recover, following decommissioning. Temporary impacts are those that occur only during project-related activities such as noise from machinery.

Impacts would be minimized through implementation of the PCMs presented in Section 2. These efforts would include containment of debris to reduce the potential for this material to contaminate wetlands and waterways in the vicinity. Additionally, sites would be assessed to determine whether mechanical or manual maintenance methods should be applied to minimize impacts in sensitive areas.

Fish

It is not anticipated that any of the special-status fish species or their critical habitat would be impacted as a result of Project-related activities. There should be no direct impacts to waterways, as PCMs would require that machinery remain outside of wetlands, creeks, rivers, and tanks. PCMs would be established that would not allow debris to fall into streams, creeks, or rivers. This would allow water flow to remain unimpeded. Additionally, as the Proposed Action would not result in a bare-ground condition within the right-of-way, the level of sediment potential transported to Fossil Creek and/or the Verde River would be insignificant. Thus these indirect impacts are not likely to impact the special-status fish species known to occur within the Project area.

Amphibians

Chiricahua and Northern Leopard Frogs

The Chiricahua leopard frog and the northern leopard frog are limited to wetlands and waterways. These species are not expected to be impacted as a result of Project-related activities. PCMs would be developed restricting the use of machinery in wetlands or saturated areas. This would alleviate the potential for direct impacts to amphibious species, and reduce the potential for the spread of the pathogenic chytrid fungus (*Batrachochytrium dendrobatidis*). This fungus can be fatal to frogs and can be transmitted through soil and vegetation on machinery, vehicles, and even boots. However, the fungus must remain moist to be viable. If saturated areas cannot be avoided, efforts will be taken to rid vehicles of debris and to decontaminate them with quaternary ammonia to kill the fungus prior to moving to new areas.

Birds

Mexican Spotted Owl

The Mexican spotted owl may be directly impacted by the Proposed Action. The Proposed Action is consistent with the activities evaluated in the BA, and therefore is consistent with the determination of effects as identified by the USFWS in the 2008 BO. Through the implementation of mitigation measures prescribed for the Mexican spotted owl (Table 2-1 and

Table 3-5), impacts to this species would be minimized. This species inhabits the types of trees that are hazardous to the transmission lines (i.e., tall, dead snags). Many trees that are or may become suitable nesting trees would be removed as a part of this Project.

Approximately 4 miles of the Project area alignments are located within the PACs described above (see Figure 3-3). Approximately 19.5 miles of Project area alignments are located within designated Critical Habitat. Table 3-5 lists mitigation measures established in the BA for this Project. These mitigation measures would be implemented in all areas where appropriate (Figure 3–4). Through implementation of these mitigation measures, it is anticipated that no take of owls, chicks, or eggs will occur.

Impacts to Mexican spotted owl habitat would occur as a result of Project-related activities. This includes areas within PACs, potentially within the core areas. Within PACs, work would not occur between March 1 and August 31. This would avoid the courtship, breeding, nesting, and fledging periods. Additionally, use of loud machinery within 0.25 mile of the PACs would not occur during this period. Exceptions to this would be if it were found that there is a hazardous situation that could result in a disturbance to operation of the transmission line(s).

The Proposed Action would result in a large amount of edge habitat. These areas can be used by owls for foraging. Through retention of downed logs and other coarse woody debris, habitat would be created for prey species such as rodents. Removal of large trees within the Project area may also reduce the intensity of fires in the canopy of the forest. As the canopy is critical nesting/roosting habitat for owls, this may prove beneficial in the future.

Northern Goshawk

Within the Project area, the northern goshawk inhabits similar habitats as the Mexican spotted owl. Additionally, it has similar breeding and nesting seasons. This being the case, it is anticipated that mitigation measures implemented for the spotted owl will also provide mitigation for the northern goshawk.

Goshawks are known to forage by flying along forest edges and across openings (AZGFD 2003b). The Proposed Action will facilitate improved habitat for prey species such as rodents, through retention of coarse woody debris, and may result in improved hunting areas through increased edge habitat.

Bald and Golden Eagles

There are known bald and golden eagle nests within the vicinity of the Project area, but no known nests within the Project area itself. To reduce the potential for nest abandonment or impacts to foraging while nesting, ground work and use of loud machinery would be avoided during the breeding season (late January to September) within 1 mile of known nesting territories, unless the territory is confirmed to be inactive. Ground activities should also avoid winter roosting areas by 0.25 mile from October 15 to April 15.

Eagles require open spaces to forage, as they are large birds that often hunt from perches or while soaring. Bald eagles will frequently hunt for fish or other aquatic species, while the golden eagle focuses on terrestrial mammals. The Proposed Action would open up the Project area and could provide improved foraging opportunities for these species.

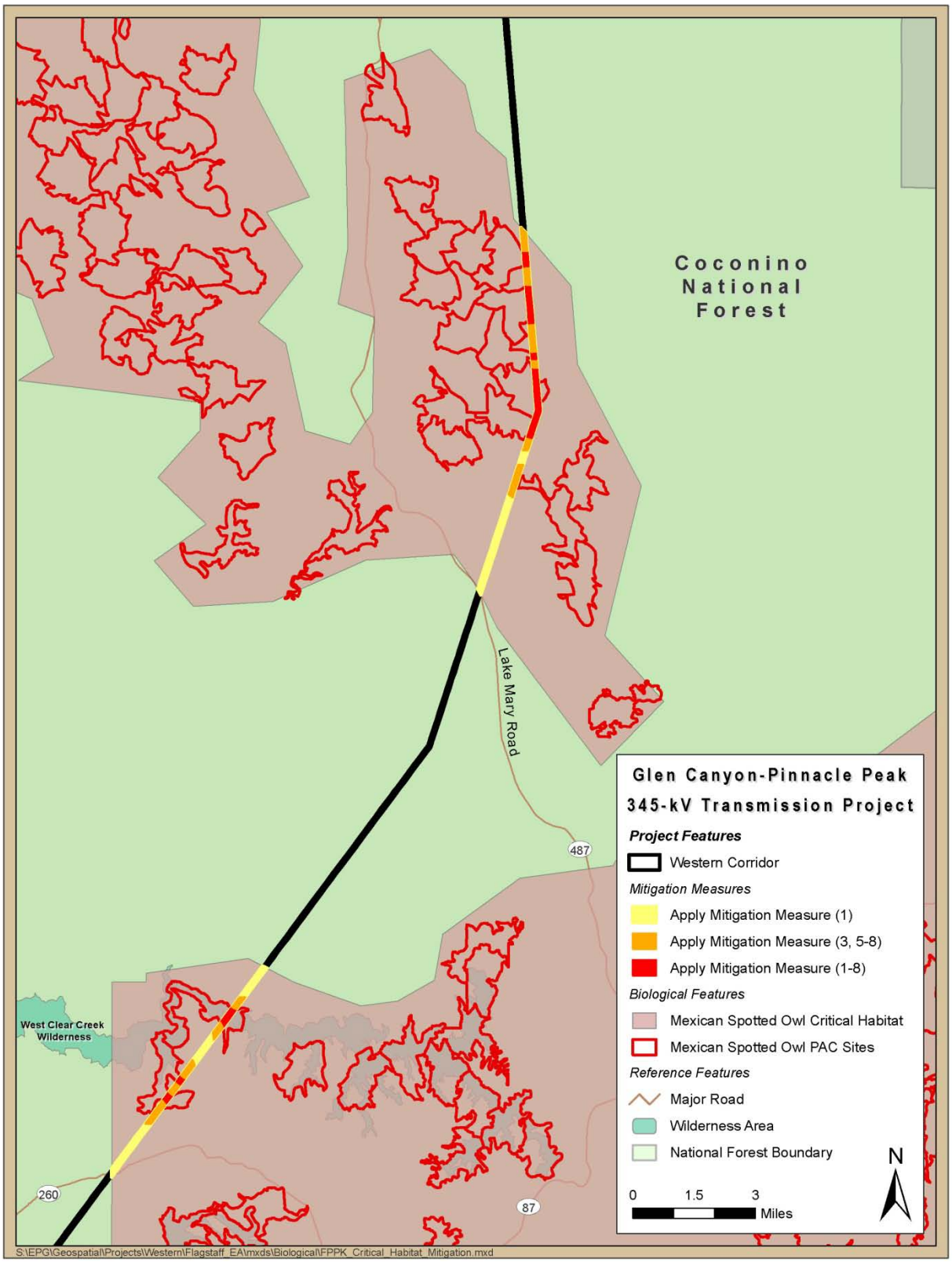

Figure 3-4. Mexican Spotted Owl Mitigation Areas

Table 3-5. Mitigation Measures for Mexican Spotted Owl		
Mitigation Measure	**Trigger**	**Applied Miles of Alignment**
1. Monitor and report proposed utility actions annually. This would include tree species, location, condition, and size class information as outlined in Appendix D of the Biological Assessment.	Any work within Mexican Spotted Owl habitat and designated critical habitat.	19.56 miles
2. Avoid ground work (use of equipment) within PACs between March 1 and August 31.	Routine maintenance within a PAC in breeding season.	4.22 miles
3. Avoid use of loud machinery within 0.25 mile of PACs between march 1 and August 31, with goal to limit noise levels at PAC boundary to < 56 decibels (dbA).	Routine maintenance within 0.25 mile of a PAC in breeding season.	9.26 miles
4. For hazard line maintenance and/or vegetation hazard treatment in a Mexican Spotted Owl PAC during the breeding season, coordinate the timing of the hazard treatments such that work is consolidated into the least number of days and least number of trips in and out of the PAC, to minimize the duration and frequency of disturbance to the Mexican Spotted Owl as much as possible.	Hazardous vegetation treatments within a PAC in breeding season.	4.22 miles
5. Coordinate disposal methods with the Forest Service District and, if appropriate/feasible, leave large (>12 inches) logs at edge of right-of-way in or adjacent to PACs.	Routine maintenance and hazardous vegetation treatments within or adjacent to PACs.	9.26 miles
6. When feasible, schedule hazard line maintenance and vegetation treatments after breeding season (i.e., defer activity to later date when low priority or when not an imminent threat to safe operation of lines/structures).	Hazardous vegetation treatments within a PAC.	4.22 miles
7. It is recommended that trees > 24 inches diameter at breast height be retained unless over-riding management situations require their removal to protect human safety and/or property (e.g., the removal of hazard trees along power lines).	Routine maintenance and hazardous vegetation treatments within or adjacent to PACs.	9.26 miles
8. Retention of hardwood, large downed logs, large trees, and snags is recommended to an extent that it does not significantly impede the overriding objective of reducing the risk of high-severity fire in Mexican Spotted Owl habitat.	Routine maintenance and hazardous vegetation treatments within or adjacent to PACs.	9.26 miles
Source: USFS 2008		

3.3.5.3 Environmental Consequences from the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Maintenance activities would be reactive, resulting in vegetation removal occurring when vegetation growth has reached a hazardous condition for continued operation of the transmission facilities. The Proposed Action would routinely remove vegetation before it becomes a hazardous condition, thus necessitating the implementation of the PCMs identified in Table 2-2 for vegetation removal activities. Consequently, implementation of the No Action alternative may result in higher impacts to biological resources in the Project area than the Proposed Action, as emergency situations prioritize resolution of the emergency (i.e., vegetation removal) over resource protection (see Section 1.4).

3.4 CULTURAL RESOURCES

3.4.1 Introduction and Methodology

This section of the EA describes the area of potential effect (APE) for cultural resources and examines the potential effects including damage, loss, degradation, or other disturbance to cultural resources under the Proposed Action and No Action alternatives.

The term "cultural resource" refers to a broad category of resources that includes prehistoric and historic archaeological sites, buildings, districts, structures, locations, or objects considered important to a culture or community for scientific, traditional, religious, or other reasons. Cultural resources deemed significant for their contribution to broad patterns of history, prehistory, architecture, engineering, and culture are eligible for listing on the National Register of Historic Places (NRHP) and afforded certain protections under the NHPA. Because the Project is a federal undertaking, it is subject to compliance with Section 106 of the NHPA of 1966, as amended (16 U.S.C. 470 et seq.). Section 106 (36 CFR Part 800, as amended August 5, 2004) requires federal agencies to consider the effects of their undertakings on historic properties, and consult with the SHPO. In addition, Section 106 and the American Indian Religious Freedom Act (AIRFA) of 1978 also specify that Native American concerns be taken into consideration.

To be eligible for listing on the NRHP, a property must be significant under one or more of four evaluation criteria:

- Criterion A: Associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B: Associated with the lives of persons significant in our past
- Criterion C: Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D: Yielded, or may be likely to yield, information important in prehistory or history

In addition, a property must be able to convey its significance through the retention of specific aspects of integrity, such as location, design, materials, setting, workmanship, feeling, and association. In general, properties less than 50 years of age, unless of exceptional importance, are not eligible for listing on the NRHP.

3.4.2 Definition of the Area of Potential Effects

As defined in Section 106 (36 CFR Part 800.16[d]), the APE refers to the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties," is "influenced by the scale and nature of an undertaking," and "may be different for different kinds of effects caused by the undertaking." As described in Section 1, the APE for the Project consists of a 420-foot wide area centered on the Western rights-of-way.

To comply with NHPA Section 106, Environmental Planning Group (EPG) archaeologists conducted a cultural resources study consisting of a detailed Class I records review, as well as an intensive Class III pedestrian survey in support of the EA and CNF's and Western's compliance with the NHPA (in preparation). Because much of the CNF cultural data are legacy files with poor spatial accuracy, probable site locations were first marked during surveys across the entire Project area, then compared with the locations of previously known sites. Subsequently, field crews returned to the field to either update existing site files or to create new documentation for the observed cultural sites. The first phase (Phase I) of site recordation commenced in the southern end of the Project area where site densities were observed to be lower than in the northern end of the Project area (Phase II). Due to the high density of sites in the northernmost seven miles of the Project, sites in that area are scheduled for future recordation in accordance with a Programmatic Agreement (PA) (currently in preparation) among Western, CNF, SHPO, and interested tribes.

In addition, Section 106 specifies that as the lead federal agency, it is Western's responsibility to ensure that consultation occurs with interested tribes to identify properties of special significance to them in the Project area. This responsibility is reinforced by the AIRFA, directing federal agencies to minimize interference with the free exercise of Native religion, and accommodate access to and use of important religious sites. Properties identified through the tribal consultation process may include traditional cultural properties (TCP), sacred landscape or landscape elements, and traditional use areas important for Native American cultural and religious practices. Since the Project area is located on CNF lands, Western has delegated the tribal consultation process to the CNF.

3.4.3 Affected Environment

The intensive Class III pedestrian survey conducted within the Project APE revealed the presence of numerous cultural properties. All are Prehistoric, Protohistoric, or Historic-era archaeological sites, and all are considered either eligible for listing on the NRHP, or their NRHP eligibility remains unevaluated. Western treats all unevaluated or potentially eligible properties in the same manner as properties that are determined eligible for NRHP listing.

Prehistoric properties include prehistoric habitation sites, agricultural field areas, and activity areas ranging in age perhaps as early as Paleoindian (8950 BC) through the AD 1400s.

Protohistoric properties consist of Puebloan and Apachean rock shelters, petroglyphs, and artifact scatters ranging in age from the late AD 1400s to the early AD 1800s. Historic sites consist of Mormon settlements, lumber camps, man-made cave shelters, trails, wagon roads, paved roads, railroad beds, ranching homesteads, mining/quarry sites, and trash dumps and range in age from the mid AD 1800s to the AD 1960s.

A total of 160 cultural sites not determined to be ineligible for listing on the NRHP were recorded and evaluated in the Phase I recording area (southern 83 miles of the Project area). Approximately 73 cultural sites are present in the Phase II recording area (northern 7 miles of the Project area) and remain to be fully recorded and evaluated in accordance with the PA. Sites in the Phase I recording area that are eligible or potentially eligible for listing on the NRHP are listed in Appendix C.

Table 3-6. Summary of NRHP-eligible or Unevaluated Cultural Resource Sites in the Phase I Recording Area

Site Type	Count
Archaic artifact scatter	5
Historic architectural site	3
Historic mining site	1
Historic transportation site	5
Multicomponent artifact scatter	1
Multicomponent petroglyph site	1
Multicomponent rockshelter and petroglyph site	1
Multicomponent site with features	4
Paleoindian artifact scatter	1
Prehistoric artifact scatter	66
Prehistoric artifact scatter with features	1
Prehistoric field house/agricultural site	17
Prehistoric habitation site	47
Prehistoric petroglyph site	4
Protohistoric site	2
Unrelocated prehistoric site	1
Total	**160**

3.4.4 Environmental Consequences from the Proposed Action

Short-term impacts include the potential for surface and subsurface disturbance of cultural properties during implementation of the Project. Through implementation of the PCMs, Western would ensure that impacts to significant cultural resources are avoided to the greatest extent possible. Although it is possible that undiscovered cultural resources exist in the APE (e.g., buried cultural sites, etc.), implementing the PCMs would also help to ensure that adverse impacts to such resources are avoided. This would be accomplished by instructing vegetation removal crews in the identification of cultural resources and by monitoring vegetation removal activities in archaeological and historic architectural sensitive zones. PCMs applicable to cultural resources are listed in Table 2-2.

No mechanical vegetation removal methods would occur within the boundaries of cultural sites; rather, vegetation within the boundaries of site that are NRHP eligible or unevaluated for their NRHP eligibility would be removed using manual methods (hand crews). At sites with standing architecture or petroglyphs, monitoring of vegetation removal activities by a Western- and CNF-approved archaeologist would be conducted to ensure those features are not damaged by the felling of large trees. Disposal of vegetation from sites would be completed in accordance with the procedures identified in Section 2.1.1.2 or in coordination with the CNF.

3.4.5 Environmental Consequences of the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Maintenance activities would be reactive, resulting in vegetation removal occurring when vegetation growth has reached a hazardous condition for continued operation of the transmission facilities. The Proposed Action would routinely remove vegetation before it becomes a hazardous condition, thus necessitating the implementation of the PCMs identified in Table 2-2 for vegetation removal activities. Consequently, implementation of the No Action alternative may result in higher impacts to cultural resources in the Project area than the Proposed Action, as emergency situations prioritize resolution of the emergency (i.e., vegetation removal) over resource protection (see Section 1.4).

3.5 LAND USE

3.5.1 Introduction and Methodology

Land use policies and regulations control the type and degree of land use and activities permitted in a given area. This section of the EA characterizes the applicable plans regulating land use within the Project area, and analyzes potential land use impacts under the Proposed Action and No Action alternative.

Existing land use data was collected through analysis of aerial photography, field verification, review of existing studies and plans, and coordination with Western and the CNF. Planned land use information was collected through review of existing plans for Coconino County and the CNF, including the CNF Land and RMP that, as required by the National Forest Management Act (NFMA), "provides for integrated multiple-use and sustained-yield of goods and services from the USFS CNF in a way that maximizes long-term net public benefits in an environmentally sound manner," (CNF RMP 1987).

3.5.2 Affected Environment

3.5.2.1 Existing Land Use

Federal Lands

Much of the approximate 6,545-acre Project area falls within the 1,821,495-acre Forest. The CNF (and the Project area), located in north central Arizona, encompasses portions of Coconino,

Yavapai, and Gila counties. Land uses within the CNF are managed under the USFS CNF-wide standards and guidelines, as well as individual Management Area standards and guidelines. A Management Area is a unit of land where given management practice is applied to "attain multiple-use and other goals and objectives" (CNF RMP 1987). In situations where Management Area standards and guidelines conflict with USFS CNF-wide standards and guidelines, the Management Area standards and guidelines supersede the Forest. The Project area crosses through 18 Management Areas (including three Wilderness Areas managed by the USFS CNF). Table 3-7 illustrates these areas crossed by and in close proximity to the Project area, and provides a brief description of each area's management emphasis. The Project area is also in close proximity to lands managed by the National Park Service (Wupatki National Monument), and the Prescott and Tonto National Forests (Mazatzal Wilderness).

County Lands

In addition to the federal land, the Project area crosses private land; which not being located within any municipality, falls under the jurisdiction of the county it is located within. The Project area crosses two private parcels located within Coconino County. One of these locations is designated as a General Zone, and one is designated as Open Space and Conservation Zone, per the Coconino County Comprehensive Plan and Zoning Code. The General Zone is a "general rural land use category intended for application to those unincorporated areas of the County not specifically designated in any other zone classification…" according to the Coconino County Zoning Ordinance, and "…only those uses are permitted which are complementary and compatible with a rural environment," (Coconino County 1964, updated 2011). The Open Space and Conservation Zone is "intended primarily for those areas of the County where it is desirable and necessary to provide permanent open spaces when such are necessary to safeguard the public health, safety and general welfare and to provide for the location and preservation of scenic areas and recreation areas." Further, "This zone classification is intended to be applied primarily to lands held under public ownership," (*ibid*).

No private parcels within the Project area are located within Yavapai or Gila County; within these counties the Project area falls entirely within CNF-managed lands. Therefore, the land use components of these counties' General/Comprehensive Plans are not included in this analysis.

3.5.2.2 Future Land Use

Future land use is based on information contained in existing planning documents (including the USFS CNF Land and RMP, the Coconino County Comprehensive Plan, and the Coconino County Zoning Ordinance). The USFS CNF plan information was the primary basis of this analysis and represents guidelines for land management.

Federal Lands

The USFS CNF Plan provides an in-depth description of current and future management directions and emphases for Management Areas within the CNF. Existing land uses within the CNF, prescribed on a per Management Area basis, are expected to remain as currently managed under the USFS CNF Land and RMP (see Table 3-7).

County Lands

The Coconino County Comprehensive Plan is "intended to serves as a roadmap for the future by establishing goals and policies to direct growth responsibly, solve problems, and improve the quality of life for county residents." The plan discusses the future land uses envisioned for unincorporated portions of the county. Within the Project area, the majority of land is not categorized by the comprehensive plan because it is under CNF jurisdiction; however, as noted above, two private parcels within the Project area fall under the jurisdiction of Coconino County.

The existing land uses within these two private parcels are expected to remain as currently managed under the Coconino County Comprehensive Plan.

3.5.3 Environmental Consequences

3.5.3.1 Federal Lands

The Proposed Action would result in persistent vegetation clearing of approximately 4,300 acres and the potential for selective removal of danger trees within a 1,310-acre area of CNF land. This land use is compatible with the CNF Land and RMP standards and guidelines, as well as the individual Management Area standards and guidelines.

3.5.3.2 County Lands

The Proposed Action would result in the vegetation clearing and selective removal of danger trees within private land under the jurisdiction of Coconino County. For these private parcels, which fall under the Coconino County zoning classifications of General and Open Space and Conservation, "utilities" is an approved conditional use; therefore activities undertaken as part of the Proposed Action, namely maintenance associated with the "utility" use, are compatible with the Coconino County Comprehensive Plan and the Coconino County Zoning Ordinance.

3.5.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Impacts under this alternative would likely be similar to the Proposed Action; however, the impacts would be spread out over time. Maintenance activities would be reactive, resulting in vegetation removal occurring when growth has reached a hazardous condition for continued operation.

Table 3-7. Management Areas Crossed by the Project

Forest Management Areas*	Name	Relative Project Area Location	Total Acreage	Acreage Within Project Area	Acreage Within Right-of-Way	Management Emphasis*
MA-1	**Wilderness Areas**		155,910	13.66	7.17	"Manage the wilderness resource to ensure its character and values are dominant and enduring. Its management must be consistent over time and between areas to ensure its present and future availability and enjoyment as wilderness. Manage wilderness to ensure that human influence does not impede the free play of natural forces or interfere with natural successions in the ecosystems and to ensure that each wilderness offers outstanding opportunities for solitude or a primitive and unconfined type of recreation. Manage wilderness as one resource rather than a series of separate resources"**
	Strawberry Crater Wilderness	Nearby	45,505	0	0	
	West Clear Creek Wilderness	Within	215,303	10.15	7.17	
	Fossil Springs Wilderness	Nearby	10,431	0	0	
	Mazatzal Wilderness	Within	89,496	3.51	0	
MA-2	Verde Wild and Scenic River	Within	2,888	23.19	15.68	"Maintain the Wild & Scenic River outstandingly remarkable values for scenic, fish, wildlife, and historic and cultural values, while also protecting the river's free-flowing character. Protection and enhancement of the specific outstandingly remarkable values and water quality within the VWSR provides the foundation upon which all management actions and authorizations of uses are based."
MA-3	Timber lands < than 40% slope	Within	511,015	554.02	272.12	"Emphasize a combination of multiple-uses including a sustained-yield of timber and firewood production, wildlife habitat, livestock grazing, high quality water, and dispersed recreation."
MA-4	Timber lands > than 40% slope	Within	46,319	19.94	9.46	"Emphasize wildlife habitat, watershed condition, and dispersed recreation. Management intensity is low."
MA-6	Unsuitable timber lands	Within	67,146	123.68	70.28	"Emphasize a combination of wildlife habitat, watershed condition, and livestock grazing. Other resources are managed in harmony with the emphasized resources."
MA-7	Piñon-juniper lands <40% slope	Within	273,815	850.32	584.55	"Emphasize firewood production, watershed condition, wildlife habitat, and livestock grazing. Other resources are managed in harmony with the emphasized resources."
MA-8	Piñon-juniper lands > 40% slope	Within	18,915	0.41	0.16	"Emphasize wildlife habitat, watershed condition, and dispersed recreation. Management intensity is low."
MA-9	Mountain Grassland	Within	9,049	21.41	16.19	"Emphasize livestock grazing, visual quality, and wildlife habitat. Other resources are managed in harmony with emphasized resources. The smaller mountain meadows in remote areas are managed mostly for wildlife habitat, especially for elk summer range."
MA-10	Transition grassland and piñon-juniper above the Mogollon Rim	Within	160,494	1,397.58	1,152.39	"Emphasize range management, watershed condition, and wildlife habitat. Other resources are managed to improve outputs and quality. Emphasis is on prescribed burning to achieve management objectives. Walnut Canyon National Monument entrance road is within this MA. The management and use of the 1000 foot right-of-way along the entrance road is directed toward the protection and maintenance of the cultural and natural resources of the area."
MA-11	Verde Valley	Within	169,529	312.03	216.18	"Emphasize watershed condition, range management, wildlife habitat for upland game birds, and dispersed recreation."
MA-12	Riparian and Open Water	Within	20,490	26.45	18.91	"Emphasize wildlife habitat, visual quality, fish habitat, and watershed condition on the wetlands, riparian forest, and riparian scrub. Emphasize dispersed recreation, including wildlife and fish recreation, on the open water portion."
MA-13	Cinder Hills	Within	13,711	134.81	101.73	"Emphasize OHV recreation opportunities and amenities. Monitor communities of plants such as *Penstemon cluteii* where and when they occur in the OHV area. Ensure continued existence of this endemic plant. Mitigate scenic integrity of areas seen from the Monument, Highway 89, and neighboring rural residential areas. Protect the Kana-a Lava flow and Gyp Crater geologic features associated with Sunset Crater."
MA-31	Craters (Cr)	Within	29,940	231.68	158.54	"Maintain cinder ecosystems, un-tracked appearance of cinder cones, and remote recreation opportunities with a high sense of self-exploration. Continue opportunities for firewood cutting and livestock grazing in the piñon/juniper woodland. Restore natural grasslands. Re-establish or maintain fire and other ecosystem processes in the piñon/juniper woodland."
MA-32	Deadman Wash (DW)	Within	58,133	655.66	470.33	"Restore and maintain grasslands and grassland adapted wildlife species, especially antelope. Provide large tracts of un-roaded landscape for disturbance sensitive species and remote recreation experiences. Protect cultural resources. Continue opportunities for livestock grazing, hunting, and firewood gathering. Balance recreation use demands on O'Leary Peak with sensitive wildlife species needs and Native American cultural values. Focus on maintenance and/or improvement of soil condition and watershed function. System roads and trails should receive adequate maintenance so that accelerated soil erosion is minimal. Non-system roads will be rehabilitated and some poorly located roads will be re-located. Rate of implementation will be dependent on funding and Forest priorities for road maintenance."
MA-33	Doney (D)	Within	40,530	227.99	168.79	"Most of this MA is within the Urban/Rural Influence Zone. Reduce the risk of catastrophic wildfire, especially within the Urban/Rural Influence Zone. Reintroduce fire's natural role as much as possible. Emphasize daytime recreation activities, both motorized and non-motorized. Balance recreation demands with protection of soils, water, and vegetation. Maintain public access to public lands. Restore natural grasslands, and promote healthy piñon/juniper woodland. Ponderosa pine lands progress towards desired forest structure (goshawk habitat). Reduce instances of illegal activities and trash dumping. Maintain scenic quality. Opportunities for firewood or other forest products are rare, however, firewood sales may be used as a tool for management."
AD-NPS	Wupatki National Monument	Nearby	35,423	0	0	
AD-Private	Private Land	Within		17.12	12.46	
SD/JM	Mazatzal Wilderness on Prescott and Tonto National Forests	Within		2.24	0	

*Quoted from the *Coconino National Forest Land and Resource Management Plan*
** Quoted from *FSM 2300 – RECREATION, WILDERNESS, AND RELATED R*ESOURCE MANAGEMENT, CHAPTER 2320 – WILDERNESS MANAGEMENT, Amendment No.: 2300-2007-1

3.6 RECREATION

3.6.1 Introduction and Methodology

This section of the EA examines the potential effects to recreational resources under the Proposed Action and No Action alternative.

Existing recreation data was collected through review of existing studies and plans, and coordination with Western and the CNF. Recreation data was collected through review of existing plans for the USFS CNF, including the CNF Land and RMP.

In order to better capture potential effects to recreation, the study area analyzed for recreation resources has been expanded and includes land within 0.5 mile of the transmission lines. Certain existing roads outside this 0.5-mile buffer are to be improved as part of the Proposed Action, as needed.

3.6.2 Affected Environment

3.6.2.1 Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is an inventory and management tool that categorizes lands managed by the USFS into six classes. Each ROS classification is defined by its setting and by the probable recreational experiences and activities that it affords (CNF RMP 1987). In the USFS recreation site planning process, ROS classifications are used to set recreational development strategies. Table 3-8 provides descriptions, acreages, percentage of the study area located within each ROS class, and percentage of the study area ROS class within the USFS CNF.

The majority of the study area falls within the Roaded Natural class, which is characterized by predominantly natural-appearing environments with moderate evidences of the sight and sounds of man. Additionally, very small portions of the proposed study area are located within areas categorized as Semi-primitive Motorized, Semi-primitive Non-motorized, and Primitive.

With the exception of the Semi-primitive Non-motorized area, contained within the West Clear Creek Wilderness Area, no class other than Roaded Natural can be found within the Project area or existing right-of-way. The Semi-primitive Non-motorized area within the West Clear Creak Wilderness Area is an area where Project facilities span at such a height that vegetation will not interfere with safe and reliable transmission line operation, and may not need to be removed or maintained.

Of the ROS classes contained within the study area, the Primitive class is the most sensitive, as it is characterized by a generally unmodified natural environment. As noted in Table 3-8, the Primitive class makes up less than 1 percent of the study area, and is not located within the Project area or existing right-of-way. No disturbance is anticipated to occur within this area.

3.6.2.2 Wilderness Areas and Recreation Sites

As stated in the CNF Land and RMP, a Wilderness Area is managed to "…ensure its character and values are dominant and enduring…" and "…to ensure its present and future availability and enjoyment as wilderness." The Land and Resource Management Plan goes on to say that Wilderness Areas are managed "…to ensure that human influence does not impede the free play of natural forces or interfere with natural successions in the ecosystems and to ensure that each wilderness offers outstanding opportunities for solitude or a primitive and unconfined type of recreation."

Portions of the Strawberry Crater, West Clear Creek, Fossil Springs, and Mazatzal Wilderness Areas are located within the study area. Small portions of Strawberry Crater, West Clear Creek, and Mazatzal Wilderness Areas are also located within the Project area. Only the West Clear Creek Wilderness Area is within the existing right-of-way; but as noted above, is located in an area where Project facilities span at such a height that vegetation will not interfere with safe and reliable transmission line operation, and may not need to be removed or maintained. Additionally, PL 98-406, the Congressional Act that designated the West Clear Creek Wilderness Area, was enacted in 1984; after the transmission lines and associated right-of-way were in place. As stated in PL 98-406, Sec. 101(b) a wilderness designation is "Subject to valid existing rights….," which in this case consists of the maintenance activities within the pre-existing transmission line right-of-way. Furthermore, per PL 98-406 Sec 101(d), the designation of wilderness areas is not intended to create "protective perimeters or buffer zones around each wilderness area" (*ibid*). Therefore, it is only the management of fall-in trees outside the existing transmission line right-of-way and within the West Clear Creek Wilderness Area, to which the wilderness management guidelines will apply.

Recreational uses on the CNF within the Project area are primarily of a dispersed nature, including hiking, horseback riding, wildlife viewing, bird watching, OHV use, and hunting. Strawberry Crater Trailhead, Forked Pine Campground, Ashurst Lake, and Childs Campground are designated recreation sites within the study area.

The Strawberry Crater Trailhead is the only USFS CNF-designated recreation site within the Project area, and no designated recreation sites are located within the designated right-of-way.

The Strawberry Crater Trailhead provides access for nonmechanized recreation activity (hiking, horseback riding, wildlife viewing, bird watching) within the Strawberry Crater Wilderness, which is outside the right-of-way of the Project.

The Fossil Creek and Verde Scenic River corridors are both located within the Project area and existing right-of-way. The Fossil Creek and Verde Scenic Rivers provide recreation opportunities including fishing, boating, rafting, hiking, biking, and photography.

Table 3-8. Recreation Opportunity Spectrum				
ROS Class	**ROS Class Description**	**Acreage within Study Area**	**Approximate Percentage of the Study Area***	**Approximate Percentage of the Study Area ROS Class within Forest**
Roaded Natural	Settings are characterized by a more natural appearing environment with moderate evidence of human activity. Interaction between users is low to moderate. Resource modification and utilization practices are evident but harmonious with the natural environment. Conventional motor vehicle use is common on paved, graveled, and unsurfaced roads.	59,942	93%	<1%
Semi-Primitive Motorized	Settings are predominantly natural environments of moderate to large size. Interaction between visitors is low, but there is often evidence of other humans. The area is managed in such a way that the minimum onsite controls and restrictions present are subtle. Motor vehicle use is permitted.	2,817	4 %	<1%
Semi-Primitive Non-Motorized	Settings are predominantly natural environments of moderate to large size. Interaction between visitors is low, but there is often evidence of other humans. The area is managed in such a way that the minimum onsite controls and restrictions present are subtle. Motor vehicle use is prohibited.	831	1%	1%
Primitive	Settings are characterized by an unmodified natural environment of fairly large size. Interaction between users is low and evidence of others is minimal. The area is managed to be essentially free of man-made "improvements" and facilities. Motor vehicles and other motorized equipment are not permitted.	244	<1%	<1%
*Approximately 1% of the study area is located outside of the CNF, and thus does not fall under any ROS classification				

1

A portion of the General Crook National Recreation Trail crosses Project area and existing right-of-way. This portion of the trail parallels Arizona SR 260. Recreation opportunities on the General Crook National Recreation Trail include hiking, horseback riding, mountain biking, and wildlife viewing. Additionally, the section of SR 260 adjacent to the General Crook National Recreation Trail is referred to as the General Crook Trail or the Zane Grey Highway. Recreation opportunities along this stretch of roadway include wildlife viewing and access to other areas of the CNF.

The Arizona National Scenic Trail is a more than 800-mile long National Scenic Trail that crosses through Project area and existing right-of-way. The Arizona National Scenic Trail extends from the Arizona-Utah border to the Arizona-Mexico border, crossing numerous biological zones and highlighting some of Arizona's greatest attributes. Within the study area, some of the recreational uses on the Arizona National Scenic Trail include hiking, backpacking, horseback riding, mountain biking, and cross-country skiing (Arizona Trail Association).

3.6.3 Environmental Consequences

Short-term impacts include the disturbance of land during implementation of the Project, and potential temporary restrictions on access to forest roads—thus, potentially restricting access to the one recreation site within the Project area, and additional recreation sites within the study area. The Proposed Action would not modify the ROS classification in the area and would be in compliance with ROS management objectives. No new access roads would be constructed; however, upgrades to existing access roads would occur, possibly increasing recreational use and traffic in the area.

Selective tree removal may occur within the Strawberry Crater, West Clear Creek, and Mazatzal Wilderness Areas, located within the Project area. No mechanical vegetation removal methods would occur within Wilderness Areas, and hazard vegetation within would be removed using manual methods (hand crews). These techniques would be completed in a manner consistent with CNF management guidelines and the 1964 Wilderness Act.

Vegetation clearing and selective tree removal activities are expected to occur within the Verde Scenic River corridor, but will take place in an area that, due to topography, is not visible to recreationalists on the river. Vegetation clearing and selective tree removal activities are also expected to occur within the Fossil Creek Scenic River corridor, and may be visible to recreationalists on the creek; however, any actions taken within this corridor would be consistent with the CNF Land and RMP standards and guidelines.

The portions of the Arizona National Scenic Trail and the General Crook National Recreation Trail that cross the existing rights-of-way and Project area do so in regions of sparse existing vegetation. Given the current recreational settings, vegetation clearing within these areas is not anticipated to impact recreationalists.

3.6.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Impacts under

this alternative would likely be similar to the Proposed Action; however, the impacts would be spread out over time. Maintenance activities would be reactive, resulting in vegetation removal occurring when growth has reached a hazardous condition for continued operation.

3.7 WILDLAND FIRE

3.7.1 Introduction and Methodology

The term *wildland fire* is applied to any nonstructural fire that occurs in the wildland. On the CNF, wildland fires are of two different types: (1) unplanned ignitions or prescribed fires that are declared wildfires and (2) prescribed fires that are planned ignitions (USFS 2011a). Unplanned ignitions, usually as a result of lightning strike, may be managed the same as a prescribed fire depending on the fire management objectives in the area that the fire is burning in, and other factors such as weather, topography, and fuel load and character. Generally, management response to wildland fire on the CNF is based on objectives established in the pertinent LRMP (Land/Resource Management Plan).

The CNF is divided into five Fire Management Units (FMU):

- ponderosa pine
- piñon-juniper
- brush
- ponderosa pine urban
- brush urban

FMUs are used to describe safety considerations, physical, biological, and social characteristics that can help direct planning guidance across the USFS CNF. Each FMU is defined by objectives, topographic features, access, values to be protected, political boundaries, fuel types, or major fire regimes that set it apart from adjacent FMUs. Each FMU is tied to specific management objectives outlined in the USFS CNF LRMP.

USFS CNF-wide goals are intended to guide managers in all aspects of resource management. Within the area traversed by the Project, the primary USFS CNF-wide goals include:

- allowing wildfire to play a more natural role in wilderness
- Fire continuing to play a natural ecological role within the constraints of human health and safety
- reducing the risk and potential for destructive crown fire, especially in the Urban Rural Influence Zone and the Wildland Urban Interface

USFS CNF-wide standards and guidelines relative to fire management include guidelines for fire suppression. In all situations when a fire is declared to be a wildfire, it will be suppressed in a rapid, energetic, and thorough manner regardless of the size of the fire. Fires that are not declared to be wildfires may be allowed to burn in order to reduce hazardous fuel accumulations and reduce the future possibility of destructive crown fires.

Fire suppression objectives have been established for four suppression zones as follows:

- Urban Interface – The suppression objective is to hold fires to 10 acres or less.

- Commercial Timber Land – The suppression objective is to hold fires to 100 acres or less per fire start. Prescribed fire using both planned and unplanned ignitions is used to accomplish fuel treatment and other management objectives. Suppression action gives top priority to protecting life and property, resource values, and private in-holdings.
- Piñon-Juniper and Desert Grasslands – The suppression objective is to hold fires to 100 acres or less per start. In ponderosa stringers and other identified important habitats the suppression objective is 300 acres or less per start. Planned and unplanned ignitions may also be used to treat fuel loads and other management objectives.
- Fires that are not a threat to other areas outside the wilderness are allowed to burn naturally, provided prescribed prescriptions are met.

When a fire is reported, a determination is made as to whether or not the fire is a wildfire or a prescribed fire. If prescribed, the fire will be monitored to ensure that it remains within prescription. Wildfires are suppressed using methods appropriate to each individual situation.

3.7.2 Affected Environment

The majority of the Project is located within the shrub/urban, piñon-juniper woodland and ponderosa pine FMUs.

The ponderosa pine FMU is dominated by ponderosa pine with local occurrences of Gambel oak, piñon pine, and one or more species of juniper. Ground cover typically consists of a variety of species of grasses and forbs. A shrubby understory is generally not typical of this vegetation type and, in the presettlement condition, this type was park-like with large open areas between large, mature ponderosa pines.

The piñon-juniper FMU, as the name implies, is floristically dominated by two species of piñon pine and several species of juniper. This type is of fairly short stature and often quite open, although it may be locally dense but never impenetrable. Several shrubby species characteristic of the shrub/urban FMU may also be present, especially in areas where piñon-juniper is ecotonal with more shrubby, lower elevation habitats.

The shrub/urban FMU is variable, but dominated by shrubby species including Manzanita, mountain mahogany, antelope brush, and species of sumac, along with scattered individuals of piñon pine and alligator juniper.

Ponderosa Pine FMU

The goal for wildfire suppression in this FMU is to keep the total wildfire-burned acreage at or below 750 acres per year over a 10-year period. This goal applies to wildfires where suppression is deemed the appropriate response.

Piñon-Juniper FMU

The goal for wildlife suppression in this FMU is to hold fires to 1,000 acres or less, with an ancillary goal of minimizing suppression costs and providing for maximum personnel safety.

Shrub/Urban FMU

The goal for wildlife suppression in this FMU is to hold fires to 1,000 acres or less, with an ancillary goal of minimizing suppression costs and providing for maximum personnel safety.

3.7.3 Environmental Consequences

Under the Proposed Action nearly all vegetation would be removed (typically mowed) within the Project rights-of-way. In addition, individual danger trees would be removed from another 60-foot band outside the 300-foot-wide mowed area. Vegetation management to achieve and maintain Western's desired condition would then occur on a 5-year cycle, instead of the current reactive approach to imminent danger trees.

Clearing within the ponderosa pine FMU would result in removal of substantial biomass of ponderosa pine, Gambel oak, and junipers. The actual biomass removal in the piñon-juniper FMU might be higher, owing to the greater density of piñons and junipers per acre. Clearing in the shrub/urban FMU would probably result in the least amount of biomass removal, but the total would still be substantial. Follow-on clearing needs in the shrub/urban FMU would probably be less than in other FMUs, because it is unlikely vegetation would ever reach conflicting heights except for isolated individual trees.

Proposed vegetation removal for this Project should reduce the potential for wildfire outbreak in the vicinity of the transmission line via the removal of fuels. Vegetation removal would also preclude the possibility of arcing between the transmission conductors and nearby tree, further reducing the likelihood of igniting wildfires. The area of cleared vegetation could act as a firebreak, especially in the case of wildfire in the crowns of pines on either side of the Project.

3.7.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, Western would continue to manage the transmission line right-of-way on a reactive basis to remove hazard trees. Hazard trees would continue to be removed on an individual basis, as identified, to prevent such trees from growing up into the transmission line conductors, or falling on to the conductors due to extreme weather events or root structure degradation. This would result in greater potential for wildfire fuels, ignition, and movement within the Project area, causing interrupted service delivery and safety hazards for Western and CNF representatives.

3.8 VISUAL RESOURCES

3.8.1 Introduction and Methodology

This section of the EA addresses visual resources, including scenic integrity objectives (SIO) and viewers related to the vegetation management and right-of-way maintenance for the Project. The text below provides a description of the methodology, affected visual resource environment for the Proposed Action, and the potential impacts to visual resources.

3.8.1.1 Scenic Integrity Objectives

Per CNF direction, the visual resource inventory and assessment was based upon the USFS Scenery Management System (SMS) (U.S. Department of Agriculture, USFS, Agriculture Handbook Number 701, 1995). The SMS approach defines a system for the inventory and analysis of aesthetic values of National Forest lands, and identifies SIOs that describe acceptable degrees of alteration that can be made to the natural landscape through the integration of aesthetics with other biological, physical, and cultural resources.

The five SIOs are Very High, High, Moderate, Low, and Very Low. Under the SMS, higher SIOs represent highly valued natural landscapes where management activities should result in little or no deviation from those values. Greater modification to the landscape is acceptable in low SIO landscapes. Very High SIO is generally reserved for designated Wilderness Areas, but may apply to additional areas of the CNF where the valued landscape character is intact and there is no evidence of apparent modification. High SIO landscapes are typically associated with areas that appear unaltered; where the valued landscape character appears intact, and any structures or surface modifications are designed to blend with the natural landscape. Moderate SIO landscapes may appear slightly altered, but alternatives are visually subordinate to the overall landscape. In Low SIO landscapes, deviations may begin to dominate the landscape.

The visual study included a data inventory and assessment of potential affected visual resources associated with the Proposed Action. Data sources included existing land use plans, aerial photography, and CNF SIO data.

3.8.1.2 Affected Environment

The following sections describe the affected environment for visual resources crossed by the Project in four ranger districts. The Project area consists of two 345 kV transmission lines, existing access roads, and right-of-way clearing required for construction. These modifications are evident along the entire Project area; however, regrowth of vegetation, in particular piñon-juniper trees, has occurred since construction. Regionally, the Project area is located within the Flagstaff character type, which is characterized as an undissected plateau that contains extensive lava flows and volcanic cones. Vegetation is predominantly coniferous forest (mountain conifer), mountain meadow grassland, plains grassland, and ponderosa or piñon-juniper woodland. Dry washes and riparian deciduous forest are also associated with the Flagstaff character type and are common along watercourses.

<u>Scenic Integrity Objectives</u>

The majority of the Project area is associated with Low SIO data (approximately 79 miles) for the entire width of the right-of-way. Low SIO refers to landscapes where the valued landscape character appears moderately altered. In Low SIO areas, landscape alterations may begin to dominate the landscape view. Isolated areas of Moderate SIO data (approximately 10 miles) are associated with portions of the Project near Bargaman Park and the Arizona National Scenic Trail, West Clear Creek Wilderness, Fossil Springs Wilderness, Mazatzal Wilderness, and the Verde River. Moderate SIO refers to landscapes where the valued landscape character appears slightly altered, but alterations are visually subordinate to the overall landscape. Generally, the

majority of the Project area is natural in appearance; however, human modifications include existing transmission lines, substations, pipelines, major travel routes, and several unpaved roads.

Viewers

The northern portion of the Project area traverses the Peaks Ranger District northeast of Flagstaff and the Mormon Lake Ranger District near FR 125. U.S. Highway 89 is crossed by the Project area near the southwestern edge of the Wupatki National Monument. The Project area is immediately adjacent to the boundary of Strawberry Crater Wilderness and crosses through the Cinder Hills OHV Area. Sunset Crater National Monument is located 2.4 miles west of the Project area along FR 545, which also provides access to the Painted Desert Vista (approximately 1.2 miles east of the Project area). There are several lakes for fishing near Anderson Mesa, a few of which offer campground and picnic facilities for recreation users. Developed campground and picnic facilities include Ashurst Lake and Kinnikinick Lake, approximately 0.5 mile and 3.5 miles from the Project area, respectively. Recreation viewers associated with Upper Lake Mary and Mormon Lake are approximately 4 miles from the Project area, and are at a lower elevation generally southwest of Anderson Mesa. Lake Mary Road (FR 3), approximately 3 miles from the Project area, also skirts the edge of Anderson Mesa providing access to recreation areas near Mormon Lake.

The southern portion of the Project crosses the Mogollon Rim Ranger District south of FR 125 and continues through the Yavapai Red Rock Ranger District until the boundary of the Tonto National Forest at the Verde River. The Project area would roughly parallel or cross several secondary forest roads, including FR 124, FR 294, and FR 229. Lake Mary Road (FR 3) is crossed by the Project south of Happy Jack. The Arizona National Scenic Trail also crosses the Project area near Bargaman Park. The Project area spans West Clear Creek Wilderness near Tule Canyon. General George Crook National Recreation Trail, which is also a historic trail, and SR 260 are also crossed by the Project area. Fossil Springs Wilderness and Mazatzal Wilderness are not crossed by the Project, but occur within 0.25 to 1 mile of the Project area. Similarly, the Verde River, a designated scenic river in the Project area, is spanned by the Project as it continues into the Tonto National Forest.

3.8.1.3 Environmental Consequences

The primary purpose of the impact assessment is to evaluate and characterize the level of visual modification, or visual contrast, to the landscape that would result from the Proposed Action. Visual contrast is defined as the degree of perceived change that occurs in the landscape due to modifications necessary for the Proposed Action. Visual contrast for the Proposed Action would primarily result from the removal of vegetation that has regrown within the right-of-way. The assessment for visual contrast is performed by comparing visual elements (form, line, color, and texture) of the existing landscape with the visual elements associated with the Proposed Action. In this regard, existing vegetation conditions within the Project area were evaluated in conjunction with Western's Proposed Action to clear the entire Project area of vegetation. The existing structures and right-of-way vegetation modifications within the Project area have altered the scenic integrity of the landscape. Portions of the Project area (i.e., existing contrast resulting from transmission line construction) are currently visible to viewers associated with travel routes

and recreation areas. Removal of vegetation within the Project area due to Project construction in the 1960's is evident; however, regrowth of woody vegetation over time has reduced visual contrast since construction of the facilities and varies along the right-of-way. Visual contrast as a result of the Proposed Action would be strongest on steep to rolling topography occupied by dense woodland vegetation; and weakest on flat, sparsely vegetated topography. However, as stated in Section 2.1 of this EA, in areas of steep terrain where the Project crosses canyons, washes, and/or depressions, Project facilities may span many of these features at such a height that vegetation would not interfere with safe and reliable transmission line operation; thus not requiring removal. This would minimize visual contrast in these areas.

Generally, removal of dense woodland vegetation on steep to rolling terrain would result in the strongest level of contrast; thus resulting in the highest visual impacts. Significant impacts would result if any of the following would occur as a result of the Proposed Action:

- substantial degradation of in high quality, diverse, and rare or unique and natural landscapes (Very High or High SIO), where anything more than minimal change in the landscape would occur
- visual changes would be dominant or readily apparent from viewer locations (i.e., travel routes, recreation areas, trails)
- visual changes would dominate a unique viewshed, vista, or scenic view

Initial Vegetation Removal

The majority of the Project area traverses piñon-juniper woodland in gently rolling to steep terrain. Portions of the Project area would cross flat grasslands with less dense areas of piñon-juniper; however, the majority of the route crosses densely wooded areas. The level of visual change or modification would be greatest where tree clearing would occur in these dense woodlands where the entire right-of-way would be cleared of vegetation. The removal of this dense vegetation would create a stronger level of line contrast at the edge of the right-of-way. Occurrences of dense piñon-juniper woodland within the Project area would require substantial vegetation removal; however, there are areas of piñon-juniper grassland that would require minimal removal. Contrast would be weaker for portions of the Project area that cross grassland or sparse areas of piñon-juniper woodland, because the right-of-way edge would be less harsh and more natural with the adjacent landscape. Similarly, visual contrast would be weaker for portions of the Project area where the majority of the vegetation has been cleared or maintained since construction of the facilities.

Overall, given the existing right-of-way conditions (i.e., modified landscape) and implementation of selective PCMs, the Proposed Action would not substantially degrade existing scenic integrity or cause substantial dominant visual contrast or alteration in the landscape seen by viewers or cause a visual interruption of a unique viewshed or scenic view. The Proposed Action would result in acceptable levels of landscape alteration (i.e., landscape contrast) for Project areas associated with Low SIO data. In Project areas associated with Moderate SIO data, the Proposed Action could result in acceptable levels of landscape alterations (i.e., visual contrast) primarily because the transmission line structures modify the existing landscape. The application of selective PCMs, such as selective vegetation clearing or other measures prescribed by the forest

Landscape Architect, would achieve an acceptable level of modification for areas associated with Moderate SIO data.

Moderate visual contrast would be visible for travel route viewers associated with U.S. Highway 89, FR 545, I-40, Lake Mary Road (FR 3), FR 125, FR 294, FR 229, and SR 260 where vegetation clearing would be evident. Impacts are anticipated to be low, because the Project would cross these travel routes perpendicularly, which would reduce viewing duration for travel routes associated with a high rate of speed (U.S. Highway 89, I-40). Low-moderate impacts are anticipated for FR 545, Lake Mary Road [FR 3], FR 125, FR 294, SR 260, and FR 229, because viewing duration would be slightly higher along these recreation destination travel routes that are crossed by the Project. Viewing duration for viewers along FR 124 would also be higher because it roughly parallels the Project area (approximately 3 miles) through piñon-juniper grassland. Vegetation removal would likely be less than in denser woodland areas; thus low visual contrast is anticipated for FR 124 viewers, resulting in minimal impacts. Moderate to low visual contrast may be visible for recreation viewers with views of the Proposed Action while immediately adjacent to Strawberry Crater Wilderness and Mazatzal Wilderness. Dispersed recreation viewers may have direct views of the Project area, resulting in moderate impacts for the Project area associated with dense woodland vegetation requiring removal and low impacts for grassland areas requiring minimal removal. Dispersed recreation viewers associated with West Clear Creek Wilderness would have inferior views (i.e., below) of the transmission lines spanning the creek near Tule Canyon. Vegetation removal at the canyon crossing is not anticipated, because the Project would span the area at such a height that it would not be required; therefore, impacts are not anticipated. Due to topography and existing dense woodland vegetation, viewers associated with the Cinder Hills OHV area may have completely to partially screened views of the Project area resulting in minimal to low impacts. Recreational travel routes associated with this OHV area may cross or parallel the Project resulting in direct views of moderate visual contrast; therefore, moderate impacts are anticipated for isolated portions of the Project area. Portions of the Project crossing the Arizona National Scenic Trail and Bargaman Park would require some removal of woodland vegetation; however, low-moderate visual contrast is anticipated due to existing right-of-way disturbances resulting in low-moderate impacts for recreation viewers. Low-moderate impacts are anticipated for viewers along the General George Crook National Recreational Trail where moderate visual contrast would be viewed in context with existing modifications, including SR 260. Contrast could be reduced through the implementation of selective PCMs, such as selective vegetation clearing at crossings or as prescribed by the forest Landscape Architect, to reduce viewer impacts.

The Proposed Action would be completely screened by vegetation and topography for viewers associated with the Painted Desert Vista (approximately 1.2 miles from the Project area) and Sunset Crater National Monument (approximately 2.4 miles from the Project area); therefore impacts are not anticipated. Visual contrast associated with the Proposed Action may be visible to recreation viewers at Ashurst Lake, which is within 0.5 mile of the Project area, resulting in moderate impacts due to partial screening by vegetation. Visual contrast would not be evident to viewers at Kinnikinick Lake, because the Project area would be completely screened by topography and vegetation; thus impacts are not anticipated. Likewise, visual contrast would not be evident for viewers associated with Upper Lake Mary and Mormon Lake, which are located west of the Project area below Anderson Mesa (approximately 4 miles), due to screening by topography. Impacts are not anticipated for dispersed recreation viewers associated with the

Fossil Springs Wilderness, because inferior views (i.e., below) would reduce visibility of the Project area and it would also be screened by existing vegetation and/or topography.

Vegetation Management and Right-of-Way Maintenance (Project Access Routes)

The level of visual contrast or alteration to the landscape would generally remain the same throughout the duration of the vegetation management and right-of-way maintenance portion of the Proposed Action. Impacts to scenic integrity objectives and viewers would remain the same as the initial vegetation removal for the Proposed Action.

3.8.1.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, changes to the current scenic integrity of the Project area would occur on an "as needed" basis for routine vegetation maintenance. Vegetation identified for removal along the right-of-way through the No Action alternative would have the potential to impact similar SIO data and viewers identified for the Proposed Action; however, scenic integrity would largely remain the same as current conditions with maintenance activities primarily occurring throughout the Project area as necessary. As a result, impacts to visual resources are anticipated to be low under the No Action alternative.

3.9 WATER RESOURCES

3.9.1 Introduction and Methodology

This section describes the affected environment and environmental consequences for water resources, which includes perennial and intermittent streams, wells/springs, designated wetlands, and water bodies.

An inventory of water resources was conducted to identify perennial and intermittent streams, water bodies, wetlands, wells, and springs for the Project. All water resources crossed by the centerline or within 600 feet of the centerline were inventoried. Information and data for the water resources inventory was obtained from the United States Geological Survey (USGS), Arizona Department of Environmental Quality (ADEQ), Arizona Department of Water Resources (ADWR), and USFWS.

3.9.2 Affected Environment

3.9.2.1 Watersheds

The Project is located within two watersheds: the Little Colorado River Watershed and the Verde River Watershed (Table 3-9). The Little Colorado River Watershed encompasses 26,794 square miles and elevation ranges between 2,700 and 12,600 feet above sea level (ADEQ 2011a). The average precipitation for the Little Colorado River Watershed is between 4 and 28.5 inches annually (ADWR 2010a). The groundwater level for the Little Colorado River Watershed ranges between 50 and 1,500 feet below ground surface (*ibid*). The study area is located mostly within this watershed.

The study area enters the Verde River Watershed south of Mormon Lake and east of Stoneman Lake. The Verde River Watershed encompasses 6,188 square miles and elevation ranges between 1,750 and 12,600 feet above sea level (ADEQ 2011b). The Verde River is perennial throughout its length. The average precipitation for the Verde River Watershed is between 10.6 and 28.5 inches annually (ADWR 2010b). The groundwater level for the Verde River Watershed ranges between 1 and 1,375 feet below ground surface (*ibid*).

3.9.2.2 Perennial and Intermittent Streams

A perennial stream has surface flow throughout the year, drying only during periods of drought (ADWR 2011). An intermittent stream only flows at certain times of the year, when it receives water from springs, snowmelt, surface runoff, or other sources. An ephemeral wash or stream flows only in direct response to precipitation and receives little or no water from springs, melting snow, or other sources (*ibid*).

There are 11 intermittent streams and no perennial streams within the study area in the Little Colorado River Watershed (Table 3-9). There are several un-named ephemeral washes located northeast of the study area in the Little Colorado River Watershed.

Three perennial and nine intermittent streams are located within the study area in the Verde River Watershed (ADWR 2010b). There are also several un-named ephemeral washes present.

Table 3-9. Water Resources within the Glen Canyon-Pinnacle Peak Vegetation Removal Project Area

Watershed	Perennial Streams	Intermittent streams	Waterbodies	Wells/Springs
Little Colorado River Watershed	None	Hulls Wash Ball Court Wash Deadman Wash San Francisco Wash Youngs Canyon Padre Canyon Anderson Canyon Cabin Draw Mormon Canyon Sawmill Wash Kinnikinick Canyon	Breezy Lake Mormon Canyon Tank 3 un-named waterbodies	Wells (1) Springs (1)
Verde River Watershed	Verde River Fossil Creek West Clear Creek	Bargaman Draw Sheep Tank Draw Brady Canyon Tule Canyon Meadow Canyon Tin Can Draw Mud Tanks Draw Boulder Canyon Sally May Wash	Rocky Bottom Tank Sin Agua Tank Powerline Tank (2) Bar D Tank Buckhead Tank Island Tank Road Tank Ernies Tank Gnat Tank Benata Tank 3 un-named waterbodies	Wells (0) Springs(1)

Sources: United States Geological Survey, United States Fish and Wildlife Services, Arizona Department of Water Resources.

3.9.2.3 Water Bodies

Nineteen water bodies are found within 600 feet of the centerline (Table 3-9). Most of these water bodies represent small stock ponds; however, several larger waterbodies, approaching 1 mile in length, are found within the study area east of Mormon lake.

3.9.2.4 Wetlands

An inventory of wetland areas was conducted using data from the USFWS (2011). Six wetlands are present within the study area, mostly in an area east of Mormon Lake, some of which are associated with the waterbodies listed in Table 3-9. The Project area also crosses a wetland area associated with the Verde River at the southern-most portion of the study area.

3.9.2.5 Wells/Springs

A well is an artificial excavation or hole for the purposes of withdrawing water from underground aquifers (USGS 2011a). A spring is defined as a place where water emerges naturally from the earth without artificial assistance onto the land surface or into a body of surface water (ADWR 2011). A total of one well and two springs is recorded within 600 feet of the centerline of the study area (see Table 3-9).

3.9.3 Environmental Consequences

This section discusses the impacts to water resources that may occur from implementation of the Project.

The Proposed Action may impact water resources present within the study area. Two types of impacts could potentially affect water resources:

- Direct impacts resulting from loss of vegetation associated with wetlands or riparian areas, or the accidental spillage of fuel or other hazardous substance into a water resource.
- Indirect impacts resulting from increased sedimentation due to loss of vegetation

Very little ground disturbance is anticipated for the Proposed Action. Existing roads will be used for the vegetation removal. These existing roads would be repaired where needed, which could include removal of obstacles and repairing minor erosion. The possible equipment used for these repairs could include backhoes, graders, and small dozers. Appropriate and effective implementation of best management practices (BMP) would mitigate adverse effects to water resources within the Project area.

3.9.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Because existing vegetation within the right-of-way would typically be left in place (except for danger trees), impacts to water resources under this alternative would likely be less than the Proposed Action. Maintenance activities would be reactive, resulting in vegetation removal occurring

when growth has reached a hazardous condition for continued operation of the facilities; however, existing vegetation and ground cover would minimize soil runoff and sedimentation from maintenance activities into nearby streams, wetlands, and waterbodies.

3.10 GEOLOGY AND SOILS

3.10.1 Introduction and Methodology

This section presents an overview of the geology, geological hazards, mineral resources, and soils present with the Project area. The main purpose of this overview is to identify sensitive geological, mineral, and soil resources that may potentially be impacted by the Project, as well as geological hazards that may adversely affect the Project.

An inventory of geological units within the Project area was conducted, using the Arizona State geological map (AGS 2000). An inventory of geological hazards was conducted that identified Quaternary faults, past earthquakes, and floodplains within 1 mile of the centerline for the Project area. The data for this inventory was obtained from the USGS, Northern Arizona University Earthquake Information Center, and the Federal Emergency Management Agency (FEMA).

An inventory of mineral resources was conducted to identify locatable, leasable, and salable mineral resources present in the study area. Locatable resources are typically metallic mineral deposits, such as copper or gold. Leasable resources include energy resources, such as petroleum, natural gas, or coal. Salable resources include sand and gravel. Information for the inventory was obtained from the BLM and USFS' Land and Mineral Legacy Rehost 2000 System (LR2000) database maintained online (BLM and USFS 2011), and the USGS Active Mines and Mineral Plants data, which shows active mines through 2003 (USGS 2011b).

An inventory of soil resources was conducted, which identified soil erosion hazards within 300 feet of the Project centerline. This inventory was based on data compiled as Terrestrial Ecosystem Units (TEU) by the CNF. TEUs have been rated for three levels of erosion hazard for bare-ground conditions: slight, moderate, and severe. For slight erosion hazards, all vegetative groundcover could be removed from the site and the resulting soil loss would not exceed tolerance levels for loss of productivity; these units would generally stabilize under natural conditions (MacDonald 2010). For moderate erosion hazards, removal of vegetative groundcover would reduce site productivity if left unchecked; reasonable and economically feasible mitigation measures could be applied to reduce or eliminate soil loss. For severe erosion hazards, removal of vegetative ground cover would have a high probability of reducing soil productivity before mitigation measures could be applied.

3.10.2 Affected Environment

The Project area is located within two physiographic provinces, as defined by the Arizona Geological Survey (Trapp and Reynolds 1995): the Colorado Plateau and the Transition Zone. The Colorado Plateau contains uplifted areas and basins, with the uplifted areas being bounded by monoclines (Case and Joesting 1972; Woodward 1973). The Transition Zone, which lies between the Colorado Plateau to the north and the Basin and Range Physiographic Province to

the south, has characteristics of both provinces, such as broad mountain ranges, mesas, and narrow valleys (Brand and Stump 2011). The area of the Colorado Plateau that is crossed by the Project area is dominated by Tertiary and Quaternary volcanic and basaltic rocks, but exposures of Permian and Triassic sedimentary rocks are also present. For the Transition Zone, the Project area also contains volcanic rocks, but Tertiary sedimentary rocks and Quaternary alluvium are also present.

Geological Hazards

Quaternary Faults

Quaternary Faults are recent faults that have had movement within the past 10,000 years. They are, therefore, considered to be active. Two Quaternary faults are present within 1 mile of the centerline, located at the northern-most portion of the Project area between U.S. Highway 89 and Wupatki National Monument.

Earthquakes

Only one known earthquake has occurred within 1 mile of the Project centerline. This earthquake happened at the northern portion of the route between U.S. Highway 89 and Wupatki National Monument in 1959, and had a magnitude of 5 on the Richter scale.

Floodplains

The Project crosses FEMA-designated floodplains near the southern terminus of the Project area in Boulder Canyon. Areas with specific flooding hazard include Fossil Creek, and the confluence of Fossil Creek with the Verde River at the southern boundary of the Project area.

Mineral Resources

No active or pending mining claims are recorded in the LR2000 within the study area. There are no active leases crossed by the Project centerline. No oil or gas leases are recorded in the LR2000 within the study area. No salable mineral claims, including sand and gravel pits, are recorded in the LR2000 within the study area.

Soil Resources

A total of 53 terrestrial ecosystem units are present within 300 feet of the Project centerline. Within the Project area (a 300-foot buffer on either side of the centerline), approximately 1,554 acres of soils have slight erosion hazard; 1,407 acres have moderate erosion hazard, and 306 acres have severe erosion hazard (Figure 3-5) (Table 3-10).

3.10.3 Environmental Consequences

Geological Hazards

Quaternary faults and earthquakes are unlikely to affect vegetation removal. Flooding within the identified floodplain areas may affect vegetation removal by sweeping away vegetation debris

left in the Project area. Vegetation debris would be left in the Project area following vegetation removal, in order to stabilize the land surface and mitigate the potential for erosion of the land surface. If this stabilizing debris is removed, erosion rates may increase for these areas within the Project area.

Mineral Resources

The Project area includes no known mineral resources or active mining areas. Vegetation removal would not limit access to or permanently occupy mineral resources within the Project area.

Soil Resources

This section discusses effects to soil resources that may occur as a result of the Project's two component vegetation removal plan: (1) initial vegetation removal within and adjacent to the right-of-way, and (2) vegetation management and right-of-way maintenance.

Erosion is the natural process by which water or wind removes soil from its natural location. Vegetation removal could adversely affect soil resources by increasing the amount of exposure of susceptible soils to water or wind erosion at the land surface. This could result in a degradation of the land surface, reduced long-term soil productivity through loss of topsoil material, and nonpoint pollution as eroded soil material is washed into nearby streams or water bodies.

The greatest potential impact to soil resources would occur during the initial vegetation removal phase, where mechanical and/or manual methods would be used to clear the Project right-of-way of vegetation, as described in Section 2.1.1 (Initial Vegetation Removal). As vegetation is removed, it would be dispersed across the right-of-way as wood chips (mechanical vegetation removal) or as scattered limbs/logs and stumps cut flush with the ground surface (manual methods). The application of this debris to the cleared land surface would assist in mitigating impacts to soil resources by intercepting rainfall, limiting impact erosion, and slowing surface runoff, further limiting erosion.

For areas that have been classified as having moderate and severe erosion hazards, appropriate and effective implementation of BMPs would mitigate adverse effects to soil resources within the Project area.

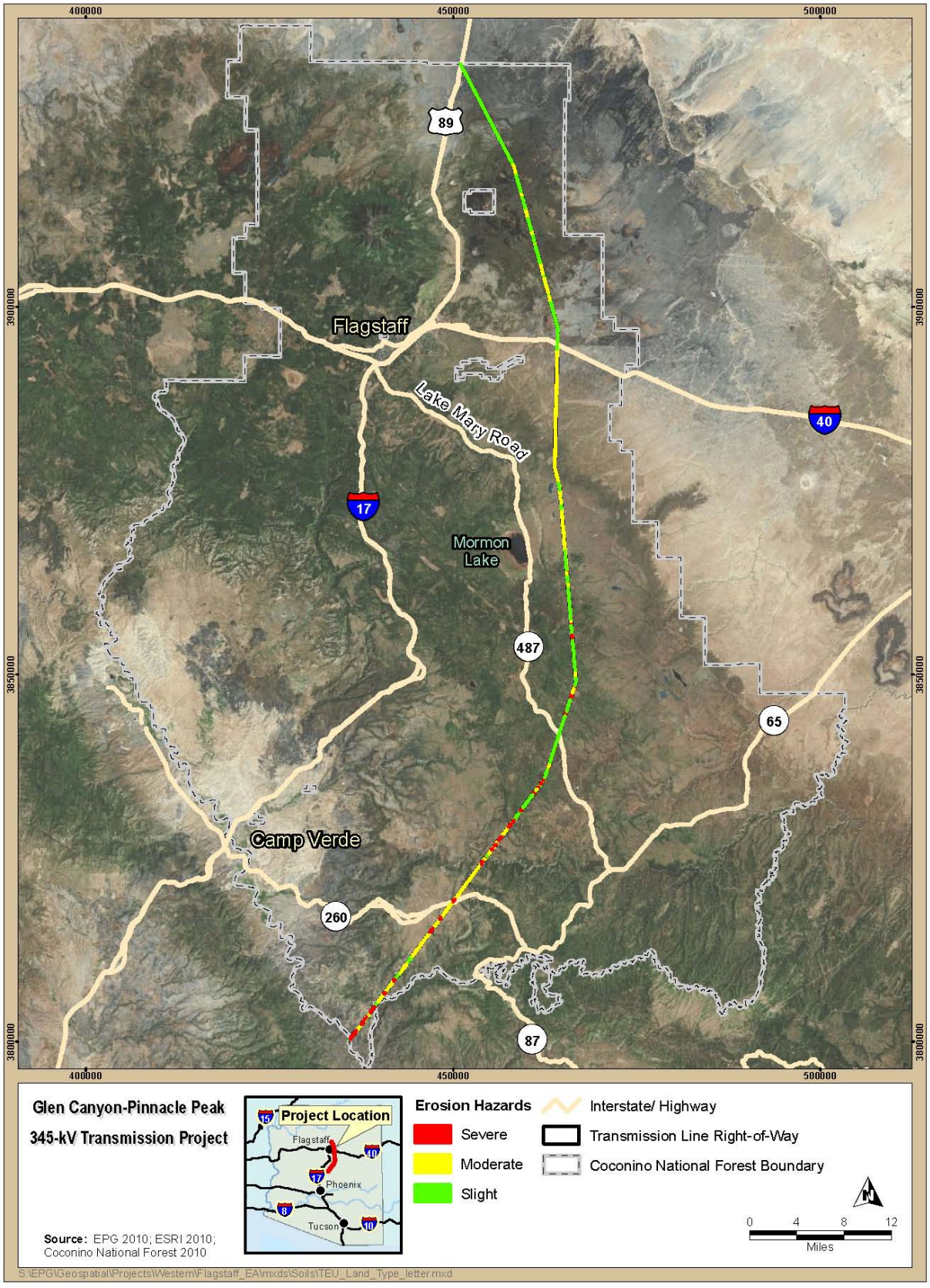

Figure 3-5. Soil Erosion Hazards

Table 3-10. Terrestrial Ecosystem Units, Their Characteristics, and Acreages within 300 Feet of the Centerline			
Map Unit	**Natural Vegetation**	**Erosion Hazard**	**Acreage**
14	Ponderosa Pine	Slight	26.9
33	Cottonwood Willow Riparian Forest	Slight	8.0
41	Great Basin Grassland	Slight	32.8
50	Wetland/Cienega	Severe	21.0
55	Montane/Subalpine Grassland	Moderate	28.1
56	Mixed Broad Leaf Deciduous Riparian Forest	Slight	0.7
382	Semi-desert Grasslands	Slight	11.3
391	Great Basin Grassland	Slight	5.9
402	Semi-desert Grasslands	Moderate	11.7
403	Semi-desert Grasslands	Slight	5.2
404	Semi-desert Grasslands	Moderate	40.1
411	Great Basin Grassland	Slight	57.9
420	Semi-desert Grasslands	Moderate	54.5
426	Piñon Juniper Woodland	Slight	83.0
427	Piñon Juniper Woodland	Moderate	5.2
430	Piñon Juniper Evergreen Shrub	Severe	77.9
433	Piñon Juniper Woodland	Slight	49.5
435	Piñon Juniper Woodland	Severe	10.7
437	Piñon Juniper Woodland	Moderate	99.8
439	Piñon Juniper Woodland	Moderate	15.8
441	Piñon Juniper Woodland	Moderate	53.9
443	Piñon Juniper Woodland	Slight	232.8
444	Piñon Juniper Woodland	Slight	83.3
453	Great Basin Grassland	Moderate	132.8
462	Piñon Juniper Evergreen Shrub	Slight	69.0
463	Piñon Juniper Evergreen Shrub	Moderate	40.0
465	Piñon Juniper Woodland	Moderate	88.4
466	Piñon Juniper Evergreen Shrub	Slight	1.2
473	Piñon Juniper Woodland	Slight	4.4
491	Piñon Juniper Woodland	Moderate	191.2
492	Piñon Juniper Evergreen Shrub	Moderate	378.0
493	Piñon Juniper Evergreen Shrub	Moderate	1.8
510	Ponderosa Pine	Slight	91.4
511	Ponderosa Pine	Moderate	10.7
512	Ponderosa Pine	Slight	11.2
513	Ponderosa Pine	Moderate	22.5
515	Great Basin Grassland	Moderate	113.7
520	Ponderosa Pine	Moderate	40.0
523	Ponderosa Pine	Slight	6.4
530	Ponderosa Pine	Severe	71.7

Table 3-10. Terrestrial Ecosystem Units, Their Characteristics, and Acreages within 300 Feet of the Centerline			
Map Unit	**Natural Vegetation**	**Erosion Hazard**	**Acreage**
550	Ponderosa Pine	Moderate	5.9
555	Ponderosa Pine	Severe	2.5
559	Ponderosa Pine	Slight	114.9
561	Ponderosa Pine	Moderate	68.1
565	Ponderosa Pine	Severe	43.0
575	Ponderosa Pine	Severe	13.6
578	Ponderosa Pine	Slight	12.5
579	Ponderosa Pine	Slight	40.3
582	Ponderosa Pine	Slight	213.8
584	Ponderosa Pine	Severe	65.1
585	Ponderosa Pine	Slight	290.6
586	Ponderosa Pine	Slight	101.0
654	Mixed Conifer w/Aspen	Moderate	5.1

3.10.4 Environmental Consequences of the No Action Alternative

Geological Hazards

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Geological hazards would not have a greater effect on the Project area beyond the current condition.

Mineral Resources

Under the No Action alternative, access to mineral resource locations would continue to not be limited or permanently occupied within the Project area. Mineral resources would not be affected under the No Action alternative.

Soil Resources

Under the No Action alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. This reactive approach to vegetation management would potentially increase the probability that hazard vegetation or danger trees could cause wildfires from transmission line flash-overs. A flash-over can occur when a tree falls on the line or grows close enough to the line that an electrical discharge occurs through the tree to the ground, which in turn could start a fire. Wildfires are capable of destroying all vegetation at the land surface, thereby exposing the soil stratum to unrestricted rainfall impact and/or surface runoff, greatly increasing loss of soil material and reducing soil productivity.

3.11 PUBLIC HEALTH AND SAFETY

3.11.1 Introduction and Methodology

This section examines potential impacts to public health and safety that could be associated with the Proposed Action and No Action alternative.

Impacts to public health and safety were evaluated based on a review of existing regulations, safety standards, Western's SOPs, and available literature. Industry practices are required to be protective of worker and public safety and health. Impacts associated with maintenance activities were assessed by comparing the Proposed Action with baseline conditions and existing safety standards and regulations.

3.11.2 Affected Environment

The entire Project area is located within the boundaries of the CNF. The general baseline conditions for assessing potential impacts to public health and safety are related to hazardous materials, physical hazards, fire hazards, and electric and magnetic fields (EMF).

3.11.2.1 Hazardous Materials

Hazardous substances are defined by federal and state regulations to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous substances are defined in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA (commonly known as Superfund) establishes requirements concerning closed and abandoned hazardous waste sites; provides for liability of persons responsible for releases of hazardous waste at these sites; and establishes a trust fund to provide for cleanup when no responsible party can be identified.

In Arizona, the ADEQ – Waste Programs Division has been tasked with protecting and enhancing public health and the environment by reducing risks associated with waste management, contaminated sites, and regulated substances. The Division ensures the proper handling, storage, treatment and disposal of wastes, and proper operation and maintenance of underground storage tanks (UST). The Division also investigates complaints and violations regarding hazardous waste and USTs.

A search of publicly available databases was used to determine if there were any Superfund sites or USTs within the Project area; none was identified (Environmental Protection Act [EPA] 2011). Two underground storage tanks were located within 1 mile of the Project area (Table 3-11) (ADEQ 2011c). The Winona Trading Post UST is located 0.85 mile from the Project area and the Childs Power Plant UST is located 0.10 mile from the Project area. It is not anticipated that USTs would be impacted by the Proposed Action; however, knowledge of their location relative to Project-related activities would ensure avoidance of USTs.

Table 3-11. USTs within 1 Mile of the Project Area			
Faculty ID	**Status**	**Site Name**	**Location**
0-003902	Leaking	Winona Trading Post	Northwest corner of the intersection of Townsend-Winona Rd and I-40
0-000393	Not-Leaking	APS – Childs Power Plant	Along Child's Power Road, approximately 0.1 mile east of the Project area
Source: ADEQ 2011c			

3.11.2.2 Physical Hazards

Project-related activities may present a physical hazard to maintenance workers and, to a lesser degree, the general public. Physical hazards resulting include injury from falling trees, injury from improper use of vegetation clearing tools, construction site dangers, lightning hazards, vehicle or aerial accidents, and electrocution. Unplanned or planned tree falls could injure maintenance workers or the general public through blunt force trauma or flying debris. Tree-falls on steep slopes could cause a person to lose footing and fall. Improper use of tools, such as machetes or chainsaws, could result in physical injury ranging from minor lacerations to loss of limbs and death. Potential for physical injury should be low if standard safety measures are followed.

3.11.2.3 Fire Hazards

Both maintenance workers and the general public could be exposed to risk from fire hazards. A fire could originate from either routine maintenance or the lack of adequate right-of-way maintenance. Routine maintenance could start a fire by igniting nearby fuel sources, such as dry underbrush. This could be caused by sparks from a maintenance vehicle or tool or a discarded burning cigarette. The lack of adequate maintenance could lead to a fire if a tree is too close to a transmission line that causes an arc. A fire could start away from the right-of-way for various reasons and later move into the right-of-way, endangering maintenance workers.

3.11.2.4 Electric and Magnetic Fields

There is a great deal of public concern regarding possible health hazards from the delivery and use of electric power. EMF are phenomena that occur both naturally and as a result of human activity. Naturally-occurring EMF are caused by the weather and Earth's geomagnetic field. Magnetic fields associated with transmission lines are created when current flows through the conductors; their strengths are determined primarily by line current, line height, and distance. Electrical transmission and distribution systems are not the only sources of magnetic fields. Local sources of magnetic fields in homes and workplaces include electric wiring and appliances.

There is considerable uncertainty regarding the health effects of EMF; the current scientific evidence indicates that these fields do not cause disease. The following findings have been established from the available information and have been used to establish Western's existing policies associated with its existing transmission infrastructure:

- Any exposure-related health risk to the exposed individual would likely be small
- The most biologically significant types of risks from exposures have not been established
- Most health concerns are related to the magnetic field
- The measures employed to reduce EMF from transmission lines can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures

No federal regulations have established environmental limits on the strengths of fields from power lines; however, the federal government continues to conduct and encourage research on the EMF issue.

3.11.3 Environmental Consequences

Project activities would be designed to meet all applicable standards to reduce the risk of an accidental release of hazardous materials. Additionally, activities would comply with all safety standards and practices so as to provide a safe workplace for Project personnel and to prevent adverse offsite impacts to the public at large.

It is not anticipated that any hazardous materials will be stored onsite. Should onsite refueling be necessary, appropriate BMPs will be implemented to avoid spills or contamination. Western's Construction Standard – Standard 13 Environmental Quality Protection, would be adhered to. Within Standard 13 are procedures that are designed to avoid contamination and spills by hazardous materials.

It is assumed that physical safety of Project personnel and the general public will be protected through implementation of BMPs and SOPs. These practices include proper attire such as hard hats, vests, and chaps if using chainsaws. Other practices may include adequate signage to alert the public to potential dangers.

Through the implementation of BMPs, SOPs, and Western's Construction Standards, it is anticipated that there would be no impacts to public or worker health and safety.

3.11.4 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, Western would continue its need-driven management approach using current methods for vegetation management and right-of-way maintenance. Maintenance activities would be reactive, resulting in vegetation removal occurring when growth has reached a hazardous condition for continued operation. Impacts under this alternative would likely be similar to the Proposed Action.

3.12 AIR QUALITY

3.12.1 Introduction and Methodology

This section describes the affected environment and the environmental consequences of the Proposed Action and No Action alternative in relation to air quality conditions throughout Coconino and Yavapai counties, which encompass the Project area. The air quality study was

conducted to assess regional impacts, specifically on Coconino and Yavapai counties and the City of Flagstaff, to existing air quality in regards to effects and environmental consequences of the Proposed Action and No Action alternative.

The quality of surface air (air quality) is evaluated by measuring ambient concentrations of pollutants that are known to have harmful effects on public health. The degree of air quality degradation is then compared to ambient air quality standards (AAQS), such as the National Ambient Air Quality Standards (NAAQS). This Project will need to comply with both the NAAQs and the State of Arizona's Air Quality Standards.

3.12.2 Affected Environment

The following sections describe the affected environments with regard to air quality for the Project.

3.12.2.1 Climate and Meteorology

Generally, the location of the Project is within an arid climate that covers Arizona and is largely influenced by seasonal variations in location and strength of a semipermanent, subtropical high-pressure circulation. The circulation is strongest during the summers, causing warm, dry conditions and heavy precipitation in the form of the North American Monsoon (Emanuel and Garfin 2006).

Specifically in Yavapai County, the climate varies from hot, arid conditions typical to the Sonoran Desert at the lower elevations, to mid-Canada at the higher elevations. The temperature variation from daytime high to nighttime low throughout the year varies approximately 35 degrees (Arizona Cooperative Extension 2010). Coconino County's climate is similar, with variations in geography, from snow-capped peaks to temperate valleys to warm desert canyons. Summer thunderstorms occur across the region (Coconino County 2003). The prevailing winds typically are from the south or south-west for both counties (Western Regional Climate Center [WRCC] 1999-2002).

The City of Flagstaff is located at an approximate elevation of 7,000 feet; experiencing a variety of weather, including cold winters and mild summers, with moderate humidity and considerable diurnal temperature changes. The average rainfall precipitation is approximately 23 inches per year and 100 inches of snowfall, with two distinct periods of precipitation occurring from November through April when Pacific storm systems move over the area, and July to August when the rainy season occurs over most of Arizona in the form of the North American Monsoon, as described above (Preston et al. 2007).

Prevailing winds in the Flagstaff area are southerly for most of the year, due to terrain influences and short-wave weather disturbances moving across the Great Basin region of the West. Winds greater than 40 mph are more likely to occur during the spring months, with damaging winds of greater than 60 mph occasionally occurring in the area outside of Flagstaff in the mountains during the winter and spring months (WRCC 1999-2002).

3.12.2.2 Air Quality Conditions

Non-attainment areas are defined as areas of the country where air pollution levels persistently exceed the NAAQS. Attainment areas are areas of the country where air pollution levels are below the NAAQS. Criteria air pollutants refer to a group of pollutants for which regulatory agencies have adopted ambient air quality standards and region-wide pollution reduction plans. Criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter, and lead. Toxic air contaminants (TAC) refer to a category of air pollutants that pose a present or potential hazard to human health, but that tend to have more localized impacts than criteria air pollutants. Reactive and volatile organic compounds and gasses (VOC) and nitrogen oxides (NO_x) are also regulated as criteria pollutants because they are precursors to ozone formation. Certain ROGs may also qualify as TACs. Two subsets of particulate matter are: inhalable particulate matter less than ten microns in diameter (PM_{10}) and fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The degree of air quality degradation is then compared to AAQS, such as the NAAQS.

The regional area that the Project is part of is within an attainment area. The air quality in the CNF remains high, despite prescribed burns and fugitive dust that can occasionally cause air pollution. The CNF requires a Prevention of Significant Deterioration (PSD) permit application to determine the potential effect increased emissions from major stationary sources may have on air quality-related values in the CNF Class I areas (CNF RMP 1987).

Air quality in both Yavapai and Coconino counties is considered to be high due to the lack of large industry and densely populated urban areas. Yavapai County does not address air quality in their comprehensive plan but Coconino does. The most common contributors to air pollution that may be found in Coconino are from the following four sources: dust and other local particulates, prescribed burns, regional haze, and power plants. Dust from dirt roads generates the most concern among residents, with the other three sources being generated outside of the County's jurisdiction (Coconino County 2003).

In Flagstaff and the surrounding areas, there is no concentration of industry; therefore pollution is low and the air nearly contaminant free. The possible pollution sources are similar to those presented for Yavapai and Coconino counties. On colder evenings, smoke from residences burning fires can create temporary air quality issues due to strong radiational inversions that occur. In spring and fall months, prescribed burns occur in the region, contributing to occasional smoke and haze issues. During the winter and spring months, fog occasionally forms due to radiational cooling from snow cover on the ground, but the fog usually breaks up quickly in the morning (NOAA 2007).

For this Project, all areas in northern Arizona must meet federal standards set by the U.S. Environmental Protection Agency. The ADEQ is responsible for issuing air quality permits, monitoring air quality, and enforcing regulations (ADEQ).

3.12.3 Environmental Consequences

The analysis examines the Project area and determines the baseline conditions for attainment of air quality standards and for current levels of emissions. The No Action alternative (i.e., continuation of existing maintenance practices) is used to establish the baseline activities (and

their associated air quality impacts) from which the Proposed Action would deviate. Air quality impacts from the Proposed Action are then analyzed and compared to baseline conditions, ensuring criteria of state and/or federal air quality standards are met.

Under the Proposed Action, Western would employ vegetation management practices that would promote low-growing plant communities within the right-of-way. In general, air quality impacts from this action would be minimal. Project activities would be temporary, intermittent, of short duration, and widely dispersed along a narrow, long strip of land. The Proposed Action would not involve the installation of any significant stationary source of air pollution. Any air quality impacts that would be caused by the mobile sources of emissions used to conduct Project activities would be minimal and local and would not cause regional changes to air quality.

Initial Vegetation Removal Activities

Some examples of initial vegetation removal activities that could affect air quality include: vehicle access to and along the Project area, and manual and/or mechanical removal of vegetation. The primary cause of air quality impacts associated with these activities would be the exhaust from vehicles. The removal of vegetation could also lead to the emission of fugitive dust particles through the exposure of bare ground. These potential impacts would be minimized to less-than-significant levels through implementation of the appropriate air quality PCMs (see Table 2-2).

Vegetation Management and Right-of-Way Maintenance

The vegetation management and right-of-way maintenance activities that would most likely cause adverse air quality effects is the proposed grading of existing access roads and vehicle access when completing vegetation management tasks. PCMs (see Table 2-2) for these activities could help to reduce fugitive dust and exhaust emissions. Similarly, repairing portions of access roads and mechanical vegetation management by means of Cut-Shredders, masticators, or other equipment could also cause fugitive dust and exhaust emissions. The frequency of these activities would be rare following the initial clearing; therefore, impacts to air quality for vegetation management and right-of-way maintenance activities would be minimal and isolated.

3.12.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, Western would continue to conduct maintenance activities within the study area in a reactive manner, clearing only those trees that pose an immediate threat to the transmission lines. The activities conducted under the No Action alternative would likely be similar to those conducted under the vegetation management and right-of-way maintenance component of the Proposed Action; however, impacts would be infrequent and isolated because vegetation would be cleared from the Project rights-of-way only on an as-needed, emergency basis.

Over the long term, adverse air quality impacts from the No Action alternative would be similar to those under the Proposed Action. Under the Proposed Action, once the vegetation type had been converted within the right-of-way, the frequency of maintenance activities would likely be reduced, resembling the activity frequency of the No Action alternative. However, long-term

adverse air quality impacts are not expected to be significant for either the Proposed Action or the No Action alternative.

3.13 NOISE

3.13.1 Introduction and Methodology

This section examines the affected environment and environmental consequences for the noise environment as a result of the Proposed Action and the No Action alternative in Coconino and Yavapai counties, which encompass the Project area. A description of the environmental setting, and any applicable noise ordinances and limitations, is provided; followed by an analysis of the noise effects associated with vegetation removal and management activities in each portion of the Project area.

To describe environmental noise and to assess Project impacts on areas that are sensitive to noise, a measurement scale that simulates human perception is customarily used. The A-weighted scale of frequency sensitivity of the human ear, which is less sensitive to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Noise is measured in decibels, which are logarithmic units that conveniently compare wide ranges of sound intensities. Table 3-12 illustrates the range of noise levels generated by Western's typical construction equipment.

Table 3-12. Typical Noise Emission Characteristics of Construction Equipment

Type of Equipment	Typical Noise Level, dBA at 50 feet
Backhoe	80
Chain saw	80
Compactor	82
Crane, Mobile	83
Excavator/Shovel	82
Loader	85
Paver	89
Truck	88

Source: Federal Transit Administration 2006

Community noise levels are usually closely related to the intensity of nearby human activity. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate when in the 45 to 60 dBA range, and high when above 60 dBA. In Wilderness Areas, the L_{dn} noise levels (i.e., an average level occurring over a 24-hour day/night period) is likely to be below 35 dBA. In small towns or wooded and lightly used residential areas, the L_{dn} is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports. Although people often accept high levels associated with very noisy urban residential and residential-commercial zones, high noise levels are nevertheless considered to be adverse to public health.

Surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are approximately 7 decibels lower than corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation and residency are often considered incompatible with substantial nighttime noise, because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference (EPA 1974).

3.13.2 Affected Environment

Noise levels in the area are highest near major transportation facilities, especially highway and freeway crossings, and near other localized noise sources such as the City of Flagstaff.

Another noise source along existing rights-of-way is audible transmission-line noise generated from *corona discharge*, which is usually experienced as a random crackling or hissing sound. Corona noise is primarily audible during wet weather such as fog and rain. For example, the typical corona noise for a 345 kV transmission line is less than 26 dBA during fair weather conditions and 49 dBA during wet weather.

Although federal standards of the Noise Control Act of 1972 and the Occupational Safety and Health Act of 1970 would be applicable to the Project, applicable CNF and county noise standards would also be included. The CNF noise standards include ensuring that aircraft operations are conducted so as to eliminate or reduce noise impacts on visitors, and restore and protect appropriate levels of natural quiet (CNF RMP 1987).

In Coconino County, the protection of the natural quiet is a countywide desirable community characteristic. The impacts of noise generated by major industrial uses are considered when projects occur in the county, especially when adjacent to recreation areas (Coconino County 2003).

3.13.3 Environmental Consequences

There are two basic considerations for evaluating noise impacts from the Proposed Action. First, noise levels projected for the Proposed Action must comply with the applicable federal, state, or local standards or regulations. Noise impacts on the surrounding community are enforced through local ordinance, supported by nuisance complaints and subsequent investigation. The second measure of impact is the increase in noise levels above the existing ambient level as a result of the introduction of a new source of noise. A change in noise level due to a new noise source can create an impact on people or biological resources.

3.13.3.1 Initial Vegetation Removal Activities

Construction noise resulting from initial vegetation removal activities, typically ranging from 70 to 85 dBA at a distance of 50 feet, would be temporary or short term; although due to the nature of initial vegetation removal activities, they would generally be of a longer duration due to the initial clearing of vegetation. Sensitive noise receptors such as residences, recreational facilities,

and wildlife habitat could potentially be disturbed by noise generated from these activities. Implementation of PCMs and keeping initial vegetation removal activities to a relatively short duration would ensure that any noise or vibration generated by the initial vegetation removal activities would not significantly adversely affect sensitive receptors or conflict with applicable federal or state noise guidelines.

3.13.3.2 Vegetation Management and Right-of-Way Maintenance

For vegetation management and right-of-way maintenance activities, recreation areas and sensitive habitats within the vicinity of the Project may be disturbed during aerial inspection by a helicopter, as well as by activities when vegetation removal and maintenance is required along the right-of-way. However, aerial inspections would typically only occur four times a year and would disturb an area along the right-of-way for less than 2 minutes (based on typical cruising and inspection rates as described in Section 1.4.1). This would result in a less than significant, short-term impact as defined by the significance criteria listed above. The maintenance activities would (typically) be relatively short, addressing vegetation issues where needed and would not significantly adversely affect sensitive receptors or conflict with applicable federal and state noise guidelines. As such, a less than significant, short-term noise impact would be expected.

3.13.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, the Proposed Action would not be implemented as described in Section 2. Western would continue to conduct routine maintenance activities within the study area in a reactive manner, clearing only those trees that pose an immediate threat to the transmission lines. However, noise impacts resulting from the No Action alternative would be generally similar to, but spaced temporally based on emergency maintenance activities, the impacts resulting from vegetation management and right-of-way maintenance activities of the Proposed Action described above.

3.14 TRANSPORTATION

3.14.1 Introduction and Methodology

This section of the EA examines the potential effects to transportation resources under the Proposed Action and No Action alternative.

Existing transportation data was collected through a review of existing plans and maps, and with the coordination of Western and the CNF. The review of existing plans for the CNF included the Land and Resource Management Plan (1987) and the Draft EIS for Travel Management (2010).

In order to better capture potential effects to recreation, the study area that was analyzed for transportation resources has been expanded and includes land within 0.5 mile of the transmission lines. Certain existing roads outside this 0.5-mile buffer are to be improved as part of the Proposed Action, as needed.

3.14.2 Affected Environment

The area that could potentially be affected by Project activities includes streets, highways, and roadways that would be crossed by or that run parallel to the transmission lines rights-of-way. U.S. interstates, state roadways, CNF roadways, and county roadways represent major thoroughfares that cross these rights-of-way. In total, very few major roadways cross the study area, including I-40, U.S. Highway 89, SR 260, National FR 3, and County Road 505.

I-40 is a major east-west highway in Arizona that passes through Flagstaff before heading east to New Mexico. It is crossed by the Flagstaff to Glen Canyon transmission lines, which begin less than 1 mile south of the Interstate at the Flagstaff Substation (approximately 15 miles east of the City of Flagstaff). SR 260 (also known as Zane Grey Highway) is a major thoroughfare that is crossed by the Pinnacle Peak to Flagstaff lines in the southern portion of the study area, south of the West Clear Creek Wilderness Area. U.S. Highway 89 is a major north-south thoroughfare that begins in Flagstaff and is crossed by the Flagstaff to Glen Canyon lines at the very northern boundary of the CNF where the Project study area ends. County Road 505 is the only major county road near the study area, and is crossed by the Flagstaff to Glen Canyon lines just north of I-40 near the small unincorporated community of Winona.

Across the approximately 90-mile study area, most of the roads that are crossed or are within 0.5 mile of the transmission lines are Forest Service System roads characterized as dirt, unimproved, or 4 wheel drive roads that are suitable for high clearance vehicles. The second and third types of roads that can be found in the study area are each suitable for passenger vehicle travel; these roads are classified as primary and secondary passenger roads. The only primary road located in the study area is FR 3. This road crosses three ranger districts, beginning near State Highway 87 and Clint Wells Campground, heads north and crosses the Pinnacle Peak to Flagstaff transmission lines near Happy Jack, passes east of Mormon Lake, and stretches northwest where it terminates just south of the I-17 and I-40 junction near Flagstaff. Table 3-13 lists forest roads by Ranger District that fall within these three general categories. The study area crosses each Ranger District within the CNF, including Red Rock, Mogollon, Mormon Lake, and Peaks districts. The greatest number of roads is crossed within the Mogollon and Peaks districts.

In accordance with the USFS' Travel Management Rule (TMR) regulations established in November 2005, the CNF is in the final stages of developing a Final EIS that addresses these regulations. Under the TMR, all forests must restrict OHV use and all other motorized vehicles, to designated roads and trail systems. Under the current Draft EIS's proposed action, approximately 12 of the 462 miles of passenger roads throughout the CNF would be closed to travel. Approximately 2,768 miles of high-clearance and OHV roads would remain open, while 1,925 miles would be closed (USFS 2010). Some of these closures would take place within the study area right-of-way. Administrative use by the CNF would be exempt from these closures. The implementation of the TMR within the CNF is expected to begin by the end of 2011 (USFS 2011b).

Table 3-13. Forest Service Road Types within the Study Area			
	Road Type		
Ranger District	Dirt, Unimproved, or 4 Wheel Drive	Primary Passenger Car	Secondary Passenger Car
Red Rock	Forest Roads: 9D, 9E, 502, 677, 708, 9235A, 9247B	Forest Road 3	–
Mogollon	Forest Roads: 81, 81A, 81B, 82B, 83, 109B, 124D, 135L, 229B, 229D, 294B, 683, 756, 9264D, 9356B, 9356D, 9359F, 9361B, 9483L, 9485H, 9366H, 9367J	Forest Road 3	Forest Roads: 81, 81E, 229
Mormon Lake	Forest Roads: 82, 233, 9483G	Forest Road 3	Forest Roads: 124, 124H, 125, 294
Peaks	Forest Roads: 4B, 498, 764, 775, 9127W, 786, 511, 244, 244B, 9122P, 9140R	–	–
Source: USDA 2008			

3.14.3 Environmental Consequences

Potential impacts that could result from initial vegetation removal and continued vegetation management and maintenance along the rights-of-way include short-term or temporary closure of interstates, state roadways, National Forest roadways, and county roadways. As indicated in the Affected Environment section, very few major roads are crossed by the study area; therefore, impacts to heavily traveled roads are expected to be minimal. Upon implementation, the TMR would limit travel on many roads previously open to the public, and could create more OHV traffic on roads that remain open. While Western expects to use public roads and roads within its rights-of-way for initial removal and maintenance wherever possible, it may be necessary to utilize CNF administrative roads under agreement with the CNF. The minimal impacts that may occur as a result of the Project's Proposed Action would be higher during the initial vegetation removal phase and drop off significantly during the routine 5-year vegetation management cycle described in Chapter 2.

3.14.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, Western would continue to conduct routine maintenance activities within the study area in a reactive manner, removing only those trees that pose an immediate threat to the transmission lines. The activities conducted under the No Action alternative would be similar to those conducted under the vegetation management and right-of-way maintenance component of the Proposed Action. Impacts to transportation would be infrequent and isolated because vegetation would be cleared from the Project rights-of-way only on an as-needed, emergency basis.

3.15 SOCIOECONOMICS

3.15.1 Introduction and Methodology

This section describes the social and economic characteristics of the study area and its surrounding environment, as well as the social and economic changes that could result from the Proposed Action. This brief assessment is based on secondary research and data that has been collected and published for a number of different purposes. Examples of secondary data sources include the U.S. Census Bureau and the Arizona Department of Commerce. This information is useful for understanding the current social and economic conditions and provides a basis for which to assess potential impacts to these resources.

3.15.2 Affected Environment

The CNF is located within three Arizona counties: Coconino, Yavapai, and Gila. The study area and CNF falls primarily within Coconino County, which encompasses 18,661 square miles within Arizona (Arizona Department of Commerce 2009). Coconino County is the second largest county in the United States, but is home to a dispersed population spread across a landscape that is characterized by rugged mountains, deep canyons, and thick forests of pine, spruce, aspen, and oak. Table 3-14 characterizes the population across counties and communities in proximity to the study area. The largest city in proximity to the CNF is Flagstaff, with an estimated population of 61,000 residents. Yavapai County is the most populated county that makes up a portion of the CNF, with much of its population located in Prescott and Prescott Valley. Between 2009 and 2020 the populations in Coconino, Gila, and Yavapai counties are expected to grow by approximately 22.8 percent, 23.4 percent, and 41.6 percent, respectively. In total, this represents an expected population growth of more than 131,000 residents, with most growth expected in Yavapai County.

Table 3-14. Population Estimates and Projections

Location	1990	2000	2009	Percent Change (00-09)	2020 (projected)	Percent Change 2009-2020 (projected)
Coconino County	96,591	116,320	129,849	11.6%	159,435	22.8%
Flagstaff	48,857	52,894	60,611	14.6%	–	–
Williams	2,532	2,842	3,336	17.4%	–	–
Sedona	7,720	10,192	11,598	13.8%	–	–
Gila County	40,216	51,335	52,199	1.7%	64,396	23.4%
Payson	8,377	13,620	15,547	14.1%	–	–
Yavapai County	107,714	167,517	215,686	28.8%	305,343	41.6%
Camp Verde	6,243	9,451	10,670	12.9%	–	–
Prescott	26,455	33,938	42,749	26.0%	–	–
Prescott Valley	8,858	23,535	38,463	63.4%	–	–
Cottonwood	5,918	9,179	11,361	23.8%	–	–

Source: U.S. Census 2000; U.S. Census 2009a; Arizona Department of Commerce 2006

Between 2000 and 2009 the number of vacant homes increased by 26.1 percent, 37.6 percent, and 17.3 percent in Coconino, Gila, and Yavapai counties, respectively (Table 3-15); indicating that there is no shortage of existing housing. However, over time, if growth reaches the levels expected as presented in Table 3-14, new housing development must occur. Regardless, any notable population increases in these communities may result in more CNF visitors.

Table 3-15. Housing Characteristics

Location	2000 Number of Units	2000 Vacant Units	2000 Percent Vacant	2009 Number of Units	2009 Vacant Units	2009 Percent Vacant	Percent change 2000 to 2009
Coconino County	53,443	12,995	24.3%	59,957	15,642	26.1%	1.8%
Flagstaff	21,396	2,090	9.8%	23,923	2,843	11.9%	2.1%
Williams	1,204	147	12.2%	1,330	168	12.6%	0.4%
Sedona	5,684	756	13.3%	7,197	1,443	20.1%	6.7%
Gila County	28,189	8,049	28.6%	30,573	11,494	37.6%	9.0%
Payson	7,033	1,201	17.1%	8,150	1,601	19.6%	2.6%
Yavapai County	81,730	11,559	14.1%	103,628	17,921	17.3%	3.2%
Camp Verde	3,988	320	8.0%	4,456	624	14.0%	6.0%
Prescott	17,144	2,046	11.9%	22,087	3,203	14.5%	2.6%
Prescott Valley	9,484	520	5.5%	15,379	1,637	10.6%	5.2%
Cottonwood	4,427	444	10.0%	5,563	480	8.6%	-1.4%
Source: U.S. Census 2000; U.S. Census 2009a							

Table 3-16 presents annual employment and wage information estimates for Coconino, Gila, and Yavapai counties for 2009.

Table 3-16. Employment and Wage Estimates by Industry – 2009

	Coconino County		Gila County		Yavapai County	
Industry	Average Annual Employment	Annual Average Wage	Average Annual Employment	Annual Average Wage	Average Annual Employment	Annual Average Wage
Goods-Producing	6,004	$47,626	2,419	$53,694	8,154	$38,503
Natural Resources and Mining	134	$28,167	976	$60,936	1,754	$50,928
Construction	2,135	$36,246	617	$33,192	3,759	$32,089
Manufacturing	3,735	$54,830	825	$60,467	2,642	$39,380
Service-Providing	35,216	$29,568	6,583	$27,648	36,519	$29,534
Trade, Transportation, and Utilities	9,387	$26,943	2,295	$26,883	11,558	$28,693
Information	364	$37,803	90	$31,793	538	$38,523
Financial Activities	1,350	$36,988	334	$30,598	1,954	$35,429
Professional and Business Services	2,690	$36,824	465	$30,301	3,516	$34,602
Education and Health Services	7,694	$47,794	1,763	$38,962	10,338	$36,897
Leisure and Hospitality	12,302	$17,939	1,448	$14,305	7,110	$16,397
Other Services	1,404	$26,008	182	$19,929	1,462	$24,483
Unclassified	25	$26,468	6	$16,937	44	$34,686
Government Employment (State, Local, Federal)	15,130	$46,431	5,003	$35,098	11,154	$39,845

Table 3-16. Employment and Wage Estimates by Industry – 2009						
	Coconino County		Gila County		Yavapai County	
Industry	Average Annual Employment	Annual Average Wage	Average Annual Employment	Annual Average Wage	Average Annual Employment	Annual Average Wage
Average Annual Wage	-	$36,019	-	$34,809	-	$32,904
Source: Arizona Department of Commerce 2010						

3.15.3 Environmental Consequences

If the Proposed Action is implemented, surrounding communities that receive power from the Project would likely be at a lower risk of experiencing power outages, wildfires, and other threats to public safety that could be caused by the lines. Impacts to population, housing, wages, and the local economy are expected to be minimal as a result of vegetation management and periodic right-of-way maintenance. A small number of temporary employment opportunities would result during each phase. Most of these opportunities would result from the initial clearing of the line, while fewer temporary opportunities would be created every 5 years as part of the regular vegetation management cycle.

3.15.4 Environmental Consequences of the No Action Alternative

Under the No Action alternative, vegetation maintenance along the Project would continue to be monitored in a reactive manner through quarterly helicopter flyovers. Residents in communities that receive electricity from the lines would continue to be at risk for power outages or potential wildfires, as trees continue to grow within proximity to the Project facilities.

3.16 ENVIRONMENTAL JUSTICE

3.16.1 Introduction and Methodology

Executive Order 12898 (1998) requires federal agencies to address high and disproportionate environmental impacts on minority and low-income populations. Should potentially significant and adverse impacts attributable to the proposed Project fall disproportionately on minority or low-income populations, environmental justice impacts would result. The required analysis involves screening the Project study area to determine if environmental justice populations exist. The study area for environmental justice populations includes all census tracts that are crossed by the Project within the CNF. If such populations exist, the analysis further involves determining whether any impacts would be significant, and if they would disproportionately affect any environmental justice populations. This brief assessment is based on secondary research and data that has been collected and published by the U.S. Census Bureau.

Council on Environmental Quality (CEQ) guidance suggests that an environmental justice population may be identified if "the minority population percentage of the affected area exceeds 50 percent" (1997). Minority populations are defined as "individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic Origin; or Hispanic" (*ibid*). Those who were American Indian or Alaskan

Native, Asian, Black, "other race," or "two or more races" were aggregated and divided by the total population for each census tract to determine which areas were greater than 50 percent minority. It is important to note that the "other race" category consists of all single race populations other than "White," "Black or African American," "American Indian or Alaska Native," "Asian," and "Native Hawaiian or Other Pacific Islander" race categories. This category comprises write-in entries, and could include Hispanic or Latino populations if the respondent considered this to be their race.

The CEQ defines low-income populations based on an annual statistical poverty threshold. In identifying low-income populations, poverty thresholds do not vary geographically and are identical across the United States (U.S. Census 2009b). In 2009, the poverty threshold for an individual living alone was $10,956. For a family of four (two adults and two children), the poverty threshold was $21,756. If the income for a family of four was below $21,756, then each person in the household was considered to be below the poverty level.

3.16.2 Affected Environment

As indicated in Section 3.15 – Socioeconomics, the CNF is located within three Arizona counties: Coconino, Yavapai, and Gila counties. The Project is located in sparse, unpopulated areas, crossing five census tracts with a total population estimated to be approximately 38,000 in 2009 (U.S. Census 2009c). Table 3-17 displays the race composition of Coconino, Gila, and Yavapai counties, including the specific census tracts crossed by the Project. Based on the information presented in the table, no communities or specific census tract crossed by the line contains a potential environmental justice population. The census tracts are composed of a largely white population.

Table 3-17. Race and Ethnicity – 2009 (percentage of total population*)

	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race, or Two or More Races	Hispanic or Latino
Coconino County	60.8%	1.2%	28.8%	1.2%	0.2%	7.8%	12.5%
Flagstaff	72.6%	2.2%	12.4%	2.1%	0.2%	10.5%	18.0%
Williams	71.2%	2.1%	1.9%	3.1%	0.0%	21.7%	36.7%
Sedona	92.1%	1.9%	0.4%	0.0%	1.0%	4.5%	13.1%
Census tract 13	80.9%	0.0%	11.6%	0.2%	0.0%	7.3%	10.8%
Census tract 14	90.0%	0.0%	3.0%	0.8%	0.0%	6.2%	11.2%
Census tract 15	92.5%	0.0%	4.2%	0.4%	0.3%	2.5%	2.8%
Gila County	78.2%	0.2%	14.6%	0.2%	0.3%	6.5%	16.9%
Payson	95.6%	0.1%	0.9%	0.1%	0.0%	3.3%	7.3%
Census tract 1	99.6%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
Yavapai County	90.4%	0.7%	1.8%	0.7%	0.1%	6.3%	12.6%
Camp Verde	83.2%	1.2%	8.0%	0.0%	0.2%	7.4%	15.1%
Prescott	92.7%	0.4%	1.7%	1.6%	0.0%	3.7%	8.3%
Prescott Valley	86.7%	0.7%	1.7%	1.0%	0.2%	9.7%	15.9%
Cottonwood	89.9%	0.7%	1.1%	0.0%	0.1%	8.2%	19.6%

Table 3-17. Race and Ethnicity – 2009 (percentage of total population*)							
	White Alone	**Black or African American Alone**	**American Indian and Alaska Native Alone**	**Asian Alone**	**Native Hawaiian and Other Pacific Islander Alone**	**Some Other Race, or Two or More Races**	**Hispanic or Latino**
Census tract 16	86.0%	90.0%	5.9%	0.0%	0.1%	0.1%	14.5%
3-County Total	79.1%	0.8%	12.4%	0.8%	0.2%	6.8%	13.1%

Source: U.S. Census 2009c
*Percentages for races are rounded and may not total 100%

Despite high poverty levels in Coconino and Gila counties, Table 3-18 indicates that each census tract crossed by the Project is below the state average of 14.7 percent of the total population below the poverty-level. Therefore, no environmental justice populations exist based on low-income thresholds for the study area.

Table 3-18. Poverty Levels 2009			
	Total Population Below Poverty Level	**Percentage of Population Below Poverty Level**	**Percentage Greater or Less Than 3-County total (+/-)**
Coconino County	21,265	17.4%	2.7%
Flagstaff	9,968	18.3%	3.6%
Williams	552	17.0%	2.3%
Sedona	1,291	11.3%	-3.4%
Census tract 13	948	8.1%	-6.6%
Census tract 14	244	4.5%	-10.2%
Census tract 15	265	8.3%	-6.4%
Gila County	9,794	19.3%	4.6%
Payson	1,277	8.4%	-6.3%
Census tract 1	204	8.1%	-6.6%
Yavapai County	26,118	12.7%	-2.0%
Camp Verde	1,762	16.6%	1.9%
Prescott	4,863	12.1%	-2.6%
Prescott Valley	4,978	13.7%	-1.0%
Cottonwood	1,840	16.8%	2.1%
Census tract 16	2,077	14.1%	-0.6%
Arizona	914,040	14.7%	–

Source: U.S. Census 2009c

3.16.3 Environmental Consequences

No environmental justice populations exist within the study area; therefore, no impacts would be expected to result from the implementation of the Proposed Action.

3.16.4 Environmental Consequences of the No Action Alternative

If the No Action alternative is selected, vegetation maintenance along the Glen Canyon to Flagstaff and Flagstaff to Pinnacle Peak transmission lines would continue to be monitored in a

reactive manner through quarterly helicopter flyovers. All residents, including environmental justice populations in communities that receive electricity from the lines, would likely continue to be at risk for power outages or potential wildfires as trees continue to grow within proximity to the lines.

3.17 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This section summarizes the potential Project-related impacts associated with the two primary components of the Proposed Action: initial vegetation removal, and vegetation management and right-of-way maintenance. As each activity type has already been discussed at length, only a summary of the impacts is provided below. Additionally, there is overlap among resource issues. Potential water-quality degradation exists as a result of the Proposed Actions and is discussed for vegetation, wildlife, fishes, water, and geology/soils. Potential erosion impacts exist as a result of the Proposed Actions and are discussed in sections on vegetation, wildlife, fishes, water, and geology/soils. The need to contain and remove hazardous materials is important for biological resources, water, geology/soils, and public health and safety. The spread of noxious weeds has potential impacts for vegetation, special-status plants, and special-status wildlife. Changes in traffic patterns are discussed in both transportation and public health and safety sections. The potential for degradation of views from sensitive viewer locations and/or changes to the scenic quality of an important landscape may occur as a result of the Proposed Action. Resource-specific PCMs have been incorporated into the Proposed Action (see Table 2-2) to avoid and minimize any potentially resultant environmental effects to sensitive resources, as described in the previous sections.

3.17.1 No Action Alternative

Project-related impacts associated with the No Action alternative would not change over existing conditions. These are the existing impacts of as-needed maintenance, repairs, and vegetation management. The Proposed Action may increase the potential for impacts in the short term, but to the extent that vegetation management and maintenance strategies described above reduce the need for long-term management, as is expected, the Proposed Action would be expected to have a net benefit compared to the No Action alternative.

3.18 CONCLUSION

Western has proactively coordinated with the CNF and SHPO to identify the occurrence of or potential for sensitive resources within the Project area. Additionally, Western has coordinated with these federal and state agencies to determine the most effective methods to reduce public and worker safety hazards and minimize potential impacts to the environment from the Proposed Action. As a result of this collaborative effort, PCMs have been developed for this Project that will allow Western to efficiently manage operation and maintenance activities while minimizing the potential for environmental impacts.

SECTION 4 – CUMULATIVE EFFECTS

4.1 INTRODUCTION

This section presents the analysis of the potential cumulative effects of the Proposed Action. Cumulative effects are defined as the total impact on the environment that occurs when impacts of a particular action are combined with those of other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR § 1508.7). Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Because rights-of-way are linear in nature, relatively narrow, and spread out over a large geographical area, a right-of-way vegetation management and maintenance program would only be expected to contribute relatively minor impacts when considered together with other actions in a project area. Furthermore, impacts are expected to be minor because the Proposed Action is focused along existing transmission lines.

Table 4-1 includes past, future, and reasonably foreseeable actions that may take place in the Project area.

Table 4-1. Cumulative Impacts

Project Name	Project Purpose	Expected Implementation	Action Type	Distance/ Proximity
APS 230 kV transmission line from Leupp Substation to Coconino Substation	Electricity transmission, reissuance of special use permits by Coconino National Forest (CNF)	—	Past, Present and Reasonably Foreseeable Future	Parallels Glen Canyon to Flagstaff lines for approximately 5 miles, beginning near County Road 505, and then heads south across I-40
Description	This APS line heads east from the city of Flagstaff and crosses the Flagstaff to Glen Canyon line (Proposed Action) just south of where it is crossed by County Road 505.			
APS 69 kV Sandvig-Youngs Powerline	Expansion of existing power line corridor for new 69 kV line	EA Approved 7/2011	Reasonably Foreseeable Future	Directly crosses Glen Canyon to Flagstaff transmission lines
Description	Construction of a new power line along existing transmission corridor from Sandvig Substation (existing) to the new Youngs Canyon Substation, east of Flagstaff (south of I-40 and just northwest of the Flagstaff Substation).			
APS 69 kV transmission line from Tap Substation to the Coconino Substation	Electricity transmission, reissuance of special use permits by CNF	—	Past, Present and Reasonably Foreseeable Future	Directly crosses Glen Canyon to Flagstaff transmission lines
Description	Existing APS line heads east from in the city of Flagstaff and crosses the Proposed Action south of I-40 and just north of the Western Flagstaff Substation, and then heads southeast.			

Table 4-1. Cumulative Impacts				
Project Name	**Project Purpose**	**Expected Implementation**	**Action Type**	**Distance/ Proximity**
Rock Pit Development: 5 pits located within proximity of line	The Coconino and Kaibab National Forests propose to develop, expand and operate up to 39 (25 existing and 14 new) material pits to provide cinders, gravel, and other aggregate materials for surfacing of unpaved roads for maintenance purposes	Over the next 20 years	Past, Present, and Reasonably Foreseeable Future	Within approximately 3 miles of the Project Area
Description	Five pits are located within proximity to the lines: Pine Hill Cinders, Youngs Canyon, and Salmon Lake are within approximately 1 mile; Buck Butte and Perry Lake are within approximately 3 miles; the Salmon Lake and Youngs Canyon rock pits would be newly constructed pits, totaling approximately 9.9 and 11.0 acres, respectively. The expansions of Pine Hill Cinders and Buck Butte rock pits would total 10.4 acres. Perry Lake rock pit would not be expanded, but would continue its current operations. A total of 0.16 mile of road would be developed for Pine Hill Cinders (0.01), Salmon Lake (0.08) and Youngs Canyon (0.07). Initially, rock pit development and expansion would involve the disturbance of surface conditions and removal of existing vegetation; heavy equipment such as bulldozers and backhoes would be used to move soil; for soils stored onsite, seeding would be used to prevent erosion and air quality impacts caused by winds.			
Coconino National Forest Motorized Travel Management Plan EIS	Compliance with National Forest Travel Management Rule (2005)	12/2011	Reasonably Foreseeable Future	Entire CNF
Description	Make changes to the designated system of roads, trails, and areas for motorized use on the CNF; changes include restrictions to off-road motor vehicle use. This plan is expected to limit off-road travel across thousands of miles of CNF roads and is expected to concentrate usage on designated roads and camping corridors. The concentration of these activities will likely result in loss of vegetation and potential scenic impacts in these areas.			
Year-round Recreation Site Access Points, Mogollon Rim Ranger District	Provide new areas within Mogollon Rim Ranger District for year-round recreation opportunities	3/2012	Reasonably Foreseeable Future	Mogollon Rim Ranger District
Description	New public access, parking areas, and facilities (including toilets, trash receptacles, kiosks, and picnic tables). Two sites are located near the Proposed Action, including a location just across from the Happy Jack Ranger Station and along Stoneman Lake Road;both projects are listed as short-term needs for the CNF.			
Grapevine Interconnect (Grapevine Canyon Wind Project)	Renewable Energy Project Development	8/2011	Reasonably Foreseeable Future	West of Mormon Lake within Proposed Action right-of-way

Table 4-1. Cumulative Impacts				
Project Name	**Project Purpose**	**Expected Implementation**	**Action Type**	**Distance/ Proximity**
Description	Approximately 9 miles of new 345 kV electric transmission line connecting a new wind park located on Flying M Ranch private property to the existing Western 345 kV line. Western is the NEPA lead. The Proposed Action will follow FS Road 125 and tie into the Flagstaff to Pinnacle Peak lines just east of Mormon Lake.			
Fossil Creek Wild and Scenic River Comprehensive River Management Plan	Compliance with Wild and Scenic Rivers Act (2009)	9/2012	Reasonably Foreseeable Future	Southern boundary of CNF
Description	The development of a comprehensive river management plan to protect and attempt to enhance the free-flow condition, the water quality, values, and allow other uses that do not substantially interfere with public use; the project will likely reduce the number of people and cars near Fossil Creek during the summer, and could involve the development of several recreation facilities, which could result in some loss of wildlife habitat in upland areas and short-term sedimentation.			
Four Forest Restoration Initiative EIS: South Kaibab and Coconino	Forest products, vegetation management, (other than forest products), fuels management, watershed management, road management	4/2012	Reasonably Foreseeable Future	Entire CNF
Description	Create landscape-scale restoration approaches that will provide for fuel reduction, forest health, and wildlife and plant diversity; businesses will play a role in this effort by harvesting, processing, and selling wood products grown in the CNF.			
Fossil Creek Wild and Scenic River Comprehensive River Management Plan	Compliance with National Forest Travel Management Rule (2005)	9/2012	Reasonably Foreseeable Future	Southern boundary of CNF and Project Area
Description	The development of a comprehensive river management plan to protect and attempt to enhance the free-flow condition, the water quality, values, and allow other uses that do not substantially interfere with public use; the project will likely reduce the number of people and cars near Fossil Creek during the summer, and could involve the development of several recreation facilities, which could result in some loss of wildlife habitat in upland areas and short-term sedimentation.			
Source: USFS 2011c; personal communication with Mike Dechter, 2011				

The following sections provide a discussion of the cumulative effects that could potentially occur as a result of the Proposed Action when considered with past, present, and reasonably foreseeable future actions. However, all Project vegetation management and right-of-way maintenance activities would take place within a narrow corridor spread over three counties. While activities at a single location could involve ground disturbance, noise, or alteration of vegetation or habitat, these activities would be localized and of short duration, with their environmental effects avoided and minimized through PCMs, so that incremental effects of the Proposed Action would not be cumulatively considerable and impacts would be less than significant.

4.2 BIOLOGICAL RESOURCES

4.2.1 Plant Communities

The projects listed in Table 4-1 being considered under cumulative impacts have a variety of potential impacts to vegetation. The rock pit developments/expansions will likely disturb the vegetation communities immediately surrounding the pits and may result in those areas experiencing a change in plant communities. The same may be experienced with the Grapevine Interconnect and the other existing transmission lines. The CNF Motorized Travel Management Plan will likely result in the loss of vegetation along designated routes; however, this plan will reduce the destruction throughout the CNF by restricting areas for off-road vehicle use. Additionally, the Four Forest Restoration Initiative will push to create healthier forests and improve plant diversity.

The Proposed Action could modify existing native plant communities into low-growing plant communities. Potential cumulative effects on habitats and vegetation could include decrease plant diversity, colonization of noxious weeds in disturbed sites, and increased fragmentation. The proposed changes to the maintenance of the right-of-way do not include construction of new rights-of-way or access roads. The noise, dust, human disturbance, and other related disturbances, in addition to construction-related disturbances of other projects in the vicinity of the Project area could add to the cumulative effects on vegetation. The implementation of Western's PCMs would minimize the Proposed Action's contribution to cumulatively considerable effects on plant communities.

4.2.2 Special-Status Plant Species

None of the projects listed in Table 4-1 are anticipated to impact known special-status plant occurrences.

The Proposed Action is not anticipated to have a significant impact on special-status plant species through vegetation removal, as the species are typically found in openings of low-growing vegetation within forests. It is assumed that projects occurring within the vicinity of these plant species would incorporate avoidance and mitigation measures to minimize impacts to these species. Through implementation of PCMs to reduce adverse impacts to special-status plant species, it is anticipated that cumulatively considerable effects would be minimal.

4.2.3 Wildlife and Special-Status Wildlife

The projects considered in Table 4-1 may have impacts to wildlife and special-status wildlife species. The Sandvig-Youngs Powerline, Pine Hill Cinders Pit, Young Canyon Pit, and Grapevine Interconnect are all located within pronghorn fawning areas. The Fossil Creek Wild and Scenic River Comprehensive River Management Plan and the Four Forest Restoration Initiative are being developed with the goals of creating healthier forests and rivers, which should result in greater wildlife diversity and stronger native species populations.

Potential cumulative effects on wildlife could include harassment and degraded or modified habitat, primarily in wooded areas where habitat could be fragmented and cover lost. Cumulative

effects on wildlife could occur when vegetation and other wildlife habitats are permanently and/or temporarily removed. The effects of the Proposed Action, along with other construction projects in the vicinity of the Project area, could increase the displacement of wildlife due to habitat loss. Additional impacts could occur from disruption of breeding and consequent loss of eggs, young animals, fledglings, or breeding adults through noise or human disturbance, collision mortality on roads, increased predation and competition from species that prefer edge habitat, or direct contact with mechanical equipment. However, through implementation of Western's PCMs, the contribution of Western's actions to cumulative effects is not considerable and impacts would be minimal.

4.3 CULTURAL RESOURCES

A cumulative impact on cultural resources could occur if the characteristics of a property that rendered it eligible for listing in the National Register were altered or degraded, or if cultural resources were damaged. Implementation of the Proposed Action, along with past, present, and reasonably foreseeable actions, would consist of planned vegetation removal and/or management within the Western rights-of-way and selective removal of danger trees adjacent to the rights-of-way. Vegetation treatment would consist of manual removal of vegetation within the boundaries of cultural sites, and cultural monitoring of vegetation removal within the boundaries of special status sites (those with important surface architectural or petroglyph features).

Although no traditional cultural properties have yet been identified within the Project area, and additional sites will be recorded and evaluated for NRHP eligibility in the Phase II area, Western has designed PCMs for cultural resources and would avoid impacts to all known sites that have not been determined ineligible for National Register listing. Implementation of cultural resource PCMs would eliminate the Proposed Action's contribution to cumulatively considerable effects on cultural resources.

4.4 LAND USE

Cumulative effects on land use could include the generation of noise, dust, and odors. Additionally, removal of vegetation within the Project area could result in increased accessibility to CNF land; this, along with potential future growth and development of nearby non-federal lands, could result in increased access. Based on current information, the Proposed Action, along with other past, present and reasonably foreseeable future actions, would not conflict with land use or land use plans.

4.5 RECREATION

Potential cumulative effects on recreation resulting from implementation of the Proposed Action along with past, present, and reasonably foreseeable future actions would include changes to visitation within the recreation study area.

The proposed changes to the designated system of roads, trails, and areas for motorized use on the CNF, as part of the CNF Motorized Travel Management Plan Environmental Impact Statement, will likely modify visitation patterns in that it is expected to concentrate motorized use on designated roads and camping corridors. This may limit recreation opportunities within

the recreation study area by restricting OHV use. Additionally, the concentration of motorized use may also increase disturbance in select areas.

Actions associated with the Mogollon Rim Ranger District Year-Round Recreation Site Access Points Project, including the development of additional public access, parking areas, and facilities, may result in increased opportunity for visitation within the recreation study area, while also potentially increasing disturbance in select areas.

The Coconino and Tonto Forests' planned Fossil Creek Wild and Scenic River Comprehensive River Management Plan may include the development of several new recreation facilities which may increase the opportunity for visitation within the recreation study area, while also, again, potentially increasing disturbance in select areas.

The generation of noise and dust associated with the Proposed Action and the potential increased opportunity for visitation as a result of these and other past, present, and reasonably foreseeable future actions, could diminish select recreational experiences in the recreation study area. However, the reasonably foreseeable actions mentioned above will also provide increased recreational opportunities within the recreation study area. Therefore, both improvements to recreational opportunities as well as isolated short-term impacts could be experienced by recreationists in the recreation study area.

4.6 WILDLAND FIRE

Potential cumulative impacts on wildland fire ecology are complex in consideration of existing and future electrical transmission and distribution systems and changes in CNF plans to accommodate and/or restrict human access and recreation opportunities.

The effects occasioned by Project implementation may include an increased spread of species that thrive on disturbed soil surfaces, including invasive and weedy species that also prosper from over story removal and soil disturbance. In the Project area, this may result in a lesser tendency for wildfire to be anything more than ground level fire due to the removal of over story trees and shrubby species that could form fire ladders to the tree canopy.

Improved access by virtue of vegetation removal in the Project area could also enhance fire-fighting efforts by making it easier for crews and equipment to reach fires. Conversely, it could also lead to more human-caused ignitions by virtue of providing greater access to the recreating public.

The CNF plans to increase recreation opportunities by creating new parking areas and other recreation facilities (toilets, trash receptacles, kiosks, and picnic tables), and could increase the chances of human-caused ignition and affect CNF opportunities for controlled burns. Conversely, CNF plans to make changes to off-road motor vehicle use and concentrate such use on designated roads and camping corridors, which could act to reduce the potential for human-caused ignitions. Plans that may reduce the number of people and vehicles in the Fossil Creek area in summer months could also help reduce the probability of undesired ignitions in that area.

4.7 VISUAL RESOURCES

Cumulative effects to visual resources could result from (1) the incremental alteration of scenic integrity in natural areas, and (2) altering viewsheds or vistas associated with viewers based on the Proposed Action in context with past, present, and reasonably foreseeable future actions.

Cumulative effects to visual resources relate to the modifications of the landscape and the viewsheds associated with viewers. Reasonably foreseeable actions that would likely effect visual resources applicable to this Project include residential development, utility development such as high-voltage transmission lines, and transportation corridor development. These developments, when added to direct effects of the Proposed Action, would incrementally convert natural landscapes into industrial landscapes, which overtime would adversely affect scenic integrity. The existing APS 230kV transmission line, which parallels the Project for approximately 5 miles, is anticipated to remain in use with the reissuance of a special use permit from CNF. The existing APS 69kV Sandvig-Youngs powerline corridor, which crosses the Project area, would be expanded to accommodate another 69kV line. The expansion of this corridor would result in modifications similar to the existing line. In addition to transmission line projects, power generation facilities that would require interconnection includes the Grapevine Wind Interconnection Project, which would require a 345kV transmission line connection across CNF land, therefore contributing to the modification of natural landscapes within the CNF. Other industrial developments near the Project area include rock pit developments near Pine Hill Cinders, Youngs Canyon, Salmon Lake, Buck Butte, and Perry Lake. With the exception of Perry Lake, each of these pits would be expanded resulting in permanent disturbance to existing landform and vegetation. Development associated with the CNF Motorized Travel Management Plan, year-round recreation site access points for the Mogollon Rim Ranger District, would likely result in landform and vegetation modifications that are non-industrial; however, these developments would incrementally modify the natural landscape which would affect scenic integrity. Landscape modifications associated with the Fossil Creek Wild and Scenic River management plan and the Four Forest Restoration Initiative EIS would focus on restoring the natural landscape which would be a positive effect for scenic integrity.

Cumulative effects associated with similar linear facilities (i.e. transmission lines) could possibly be reduced by consolidating, to the extent practicable, like facilities and sharing access wherever possible. In addition, through the implementation of PCMs, incremental effects of the Proposed Action would not be cumulatively considerable and impacts would be less than significant.

4.8 WATER RESOURCES

Ground-disturbing activities could potentially increase the sedimentation to rivers and water bodies within the Project area, thereby adding to the cumulative effects to water resources. The major river crossings that could be cumulatively affected are the Verde River, Fossil Creek, and West Clear Creek. There are also numerous intermittent streams and small water bodies that could be cumulatively affected as well. With implementation of PCMs, the contribution of cumulative effects to water resources from vegetation clearing is not considerable and cumulative effects would be less than significant.

4.9 GEOLOGY AND SOILS

4.9.1 Geological Hazards

There are no cumulative effects from geological hazards associated with the Proposed Action. Other projects will not have cumulative effects from geological hazards. Only two Quaternary faults and one earthquake epicenter are located within 1 mile of the centerline. Floodplains were identified along Fossil Creek and the Verde River. With implementation of PCMs, the Proposed Action would not have any cumulative effects from geological hazards.

4.9.2 Soils

Impacts to soils are generally localized and do not result in regional cumulative effects. Soil conditions could vary significantly over short distances, effectively limiting the geographic range of the impacts to soil resources. Therefore, the impacts of the Proposed Action to soil resources would be localized within the Project Area. Vegetation-clearing activities could increase erosion and reduce soil productivity. However, these impacts would be temporary and less than cumulatively significant if BMPs and mitigation measures were to be implemented.

4.9.3 Mineral Resources

No mineral resources have been identified within the Project Area. Therefore, vegetation management and right-of-way maintenance activities would not have cumulative effects to mineral resources.

4.10 PUBLIC HEALTH AND SAFETY

Potential impacts on public health and safety could result from hazardous materials, physical hazards, fire, and electric and magnetic fields from the Proposed Action, as well as current or reasonably foreseeable future projects in the vicinity of the Project area. With the exception of hazardous materials, these impacts could be increased without routine vegetation maintenance within the right-of-way.

Hazardous materials include gasoline, engine oil, and brake and transmission fluids, among other toxic pollutants; however, most of these substances only become hazardous if spilled or handled inappropriately. It is assumed that personnel associated with the Proposed Action and other current and future projects would implement appropriate BMPs to reduce, if not eliminate, the potential for adverse impacts to public health and safety. It is anticipated that through the utilization of BMPs and PCMs, the contribution of Western's actions to the cumulative effects to public health would be minimal.

4.11 AIR QUALITY

Dispersed OHV/recreation activities that occur in the area could temporarily increase particulate emissions, reducing air quality resulting in potential cumulative air-quality impacts. Areas that this could occur include the year-round recreation site access points for the Mogollon Rim Ranger District and certain areas within the Coconino National Forest Motorized Travel

Management Plan and the Fossil Creek Wild and Scenic River Comprehensive River Management Plan. Temporary air quality impacts may occur as well with future projects that include the APS 69kV Sandvig-Youngs powerline, and the Grapevine Interconnect and existing projects that include the APS 230kV transmission line from Leupp substation to the Coconino substation and the 69kV transmission line from the TAP substation to the Coconino substation when vegetation management activities are occurring at the same time as construction or maintenance activities are occurring with these other projects; however, there are no substantial permanent sources of emissions to occur from these maintenance activities and the temporary dispersed OHV activities.

4.12 NOISE

Temporary noise disturbance could occur in wildlife habitats in the CNF but due to the temporary nature of the initial removal of the vegetation and maintenance activities, the temporary construction and/or maintenance on future and existing projects in the CNF, and the temporary dispersed OHV/recreation activities, the potential for cumulative effects would not occur. Western would implement PCMs to reduce noise in the Project area, thereby eliminating the Proposed Action's contribution to cumulative noise effects.

4.13 TRANSPORTATION

Cumulative impacts could result from the closure or disruption of travel on U.S. interstates, state roadways, National Forest roadways (including primary and secondary passenger roads and off-highway routes), and county roadways. While major transportation corridors that cross the Project area are most likely to experience the closures from routine maintenance, other USFS CNF projects such as activities associated with enforcing the TMR and development of two new recreation sites near the transmission lines could result in cumulative impacts. Increased visitation to areas that have not frequently been used for travel or recreation could experience an increase in usage. With the utilization of PCMs, Western's actions to cumulative effects impacting transportation would not be considerable and impacts would be expected to be less than significant.

4.14 SOCIOECONOMICS

Cumulative impacts could occur to certain groups as the result from the implementation of the Forest Service TMR and the Proposed Action. These affected groups could include hikers, OHV user groups, and others who visit the areas within or surrounding the Project area. For example, these users could be impacted if limited access is a factor that decreases their visitor experience within the CNF. However, the implementation of Western's PCMs would likely result in very minimal social impacts to these user groups and would still allow access to the more popular sites in the CNF. No significant cumulative impacts are expected to affect economic resources.

4.15 ENVIRONMENTAL JUSTICE

Because no environmental justice populations were identified in the previous section, no cumulative impacts are expected to result from the combination of this Project and others within proximity to the Project area.

SECTION 5 – COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

This section presents the federal, state, and local laws, ordinances, and regulations applicable to the Proposed Action.

5.1 FEDERAL

5.1.1 National Environmental Policy Act (NEPA)

This act requires federal agencies to consider the impacts to the human and natural environment from their actions. The Council on Environmental Quality has published implementing regulations (40 CFR parts 1500-1508) and the Department of Energy (DOE) has published implementing procedures (10 CFR part 1021) that govern Western's compliance with NEPA. Actions such as right-of-way maintenance can normally be categorically excluded as part of the routine maintenance exclusion (see Appendix B or subpart D of 10 CFR part 1021), as long as the actions meet the integral elements of that exclusion. However, other land managing agencies may have other requirements when such actions are taken on their lands.

5.1.2 Comprehensive Environmental Response, Compensation and Liability Act

The CERCLA regulates methods of cleaning up recent and past spills of hazardous substances, as well as defines periods within which the EPA and other agencies must be notified of current spills. Federal and state agencies are notified based on the reportable quantities of the hazardous substances.

Along with the National Contingency Plan, the CERCLA specifies federal natural resource trustees. The DOE is a designated trustee for natural resources that are on, over, or under land within its jurisdiction and not specifically the responsibility of some other resource management agency. Federal facilities that have released hazardous substances, therefore, should clearly be concerned about natural resource damage liabilities. The DOE may have a dual role here, however, because its own activities have resulted in hazardous substance releases. As the CERCLA's lead response agency, the DOE may be subject to natural resource liabilities to other trustees.

5.1.3 Occupational Health and Safety Act and Hazard Communication Standard

The Occupational Health and Safety Act (OSHA) protects worker health and safety. The OSHA Hazard Communication Standard requires workers to be provided with a material safety data sheet for all hazardous materials, and requires that workers are trained regarding the hazards of any materials that are handled. Information is provided to workers on how best to protect themselves in the workplace, as well as on what to do during emergencies such as spills and fires.

5.1.4 Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act requires placards and shipping papers for shipping certain quantities of hazardous materials, and requires the reporting of any accidents that may occur in transit.

State OSHA, EPA, agricultural agencies, and local health and weed control agencies may also have specific regulations that deal with pesticide use, spills, transportation, and disposal of hazardous materials.

5.1.5 Federal Noxious Weed Act of 1974

The Federal Noxious Weed Act of 1974 defines a noxious weed as any living stage of a plant that can directly or indirectly injure crops, other useful plants, livestock, or poultry or other interests of agriculture, including irrigation, navigation, the fish and wildlife resources of the United States, or the public health. It requires federal agencies to work with state and local agencies to develop and implement noxious weed management programs on federal lands.

This act regulates the sale, purchase, and transportation of noxious weeds into or through the United States, as well as the inspection and the quarantine of areas suspected of infestation. It provides for the disposal or destruction of infested products, articles, means of conveyance, or noxious weeds. Persons who violate these regulations are subject to fines of up to $5,000 and/or imprisonment up to 1 year.

5.1.6 Endangered Species Act

The ESA protects listed plants and animals that are threatened by habitat destruction, pollution, overharvesting, disease, predation, or other natural or man-made factors. It stipulates that listed species cannot be taken without a special permit (take, as defined under the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct"). All federal agencies must ensure that their activities do not jeopardize a listed species or its critical habitat.

5.1.7 Fish and Wildlife Coordination Act

This Fish and Wildlife Coordination Act requires all federal agencies to consult with state and federal wildlife management agencies prior to approving any federal action that may affect a stream or other body of water.

5.1.8 Migratory Bird Treaty Act of 1918, as Amended

The Migratory Bird Treaty Act protects migratory birds by making it unlawful to pursue, take, attempt to take, capture, possess, or kill any migratory bird, or any part, nest, or egg of any such bird, unless and except as permitted by regulation. The act is intended to protect birds that have common migratory patterns within the United States, Canada, Mexico, Japan, and Russia.

Section 704 of the act states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed, and to adopt

suitable regulations permitting and governing take. Certain exceptions apply to employees of the U.S. Department of the Interior to enforce the act and to employees of federal agencies, state game departments, municipal game farms or parks, public museums, public zoological parks, accredited institutional members of the American Association of Zoological Parks and Aquariums (now called the American Zoo and Aquarium Association), and public scientific or educational institutions.

5.1.9 Bald Eagle Protection Act of 1940

This act makes it unlawful to capture, kill, destroy, molest, or disturb bald eagles, their nests, or their eggs anywhere in the United States. The act also protects Golden Eagles because they are similar in appearance; however, they are accorded somewhat lighter protection than the Bald Eagle. A permit must be obtained from the U.S. Department of Interior to relocate a nest that interferes with resource development or recovery operations.

The enacting clause of the act stated that the Continental Congress in 1782 adopted the Bald Eagle as the national symbol, that it became the symbolic representation of a new nation and the American ideals of freedom, and that it was threatened with extinction. The act imposes criminal and civil penalties on anyone (including associations, partnerships, and corporations) in the United States or within its jurisdiction who, unless excepted, takes, possesses, sells, purchases, barters, offers to sell or purchase or barter, transports, exports or imports at any time or in any manner a Bald or Golden Eagle, alive or dead; or any part, nest or egg of these eagles; or violates any permit or regulations issued under the act.

If compatible with the preservation of Bald and Golden Eagles, the Secretary of the Interior may issue regulations authorizing the taking, possessing, and transporting of these eagles for scientific or exhibition purposes, for religious purposes of Indian tribes, or for the protection of wildlife, agricultural, or other interests.

5.1.10 National Historic Preservation Act

The NHPA directs that government agencies must locate and inventory historic properties and cultural resources eligible for the National Register prior to taking an action that might harm them, with the intent of minimizing such harm through appropriate avoidance measures. Agencies must consider the effects of their actions on identified historic properties prior to implementing the action.

5.1.11 American Indian Religious Freedom Act

The American Indian Religious Freedom Act establishes that it is the policy of the United States to protect and preserve for Native Americans their inherent right of freedom to believe, express, and exercise their traditional religions. This includes access to sites, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.

5.1.12 Executive Order 13007, Indian Sacred Sites

This Executive Order (EO) directs federal agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of those sacred sites. This includes providing reasonable notice of proposed actions or land-management policies that may restrict access or affect the physical integrity of sacred sites. It also directs agencies to keep confidential information pertaining to such sites.

5.1.13 Archaeological Resources Protection Act of 1979

The Archaeological Resources Protection Act secures the protection of archaeological resources and sites on both public and Indian lands. The act includes stiffer penalties and fines for a detailed list of prohibited acts, and sets forth uniform regulations for excavation, removal, disposition, exchange, and information disclosure of archaeological resources.

5.1.14 Clean Air Act

The Clean Air Act (CAA) of 1970, and the CAA Amendments of 1990, as amended, establish air quality standards for protection of public health and the environment. The ambient air quality in an area is characterized in terms of whether or not it complies with the primary and secondary NAAQS. The CAA, as amended, requires the EPA to set NAAQS for pollutants considered harmful to public health and the environment. NAAQS are provided for six principal pollutants, called "criteria pollutants" (as listed under Section 108 of the CAA): CO, lead, NO_x, SO_2, ozone, and PM, divided into two size classes (aerodynamic size less than or equal to 10 micrometers [PM_{10}] and aerodynamic size less than or equal to 2.5 micrometers [$PM_{2.5}$]).

Title III of the CAA, as amended, provides for regulation of 187 specifically listed hazardous air pollutants (HAP). Emission standards have been developed for sources that emit HAPs, but no NAAQS have been developed. The Title V Operating Permit Program under 40 CFR Part 70 requires sources that meet the definition of a "major source" of criteria pollutants or HAPs to apply for and obtain a Title V operating permit. A major source of HAPs has the potential to emit more than 10 tons per year of any individual HAP or 25 tons per year of any combination of HAPs. The definition of a major source for criteria pollutants is dependent upon the air quality attainment status of the region in which the source is located.

5.1.15 Presidential Memorandum Dated April 26, 1994, for the Heads of Executive Departments and Agencies and Guidance for this Memorandum from the Office of the Federal Environmental Executive (60 FR 40837; August 10, 1995)

In this memo and the accompanying guidance, agencies are directed to:

- Use regionally native plants for landscaping
- Design, use, or promote construction practices that minimize adverse effects on natural habitat
- Implement water-efficient practices, such as use of mulches, efficient irrigation systems, audits to determine water-use needs, and siting of plants in a manner that conserves water and controls soil erosion

- Plant regionally native shade trees to reduce air conditioning demands
- Create outdoor demonstrations incorporating native plants, as well as pollution-prevention and water-conservation techniques

5.1.16 Aquatic Conservation Strategy

The Aquatic Conservation Strategy was implemented in 1994 to restore and maintain aquatic and riparian ecosystems, particularly salmon habitat, on federal lands governed by the Northwest Forest Plan. It focuses on riparian reserves, key watersheds, watershed analysis, and watershed restoration, and has nine objectives that proposed activities on USFS and BLM land must meet.

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

2. Maintain and restore spatial and temporal connectivity within and between watersheds.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

5.1.17 Paleontological Resources Preservation Act of 2009

The Paleontological Resources Preservation Act is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). This act directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land, and develop plans for the inventory, monitoring, and deriving of the scientific and educational use of such resources. It prohibits the removal of paleontological resources from federal land without a permit issued under this act, establishes penalties for violation of this act, and establishes a program to increase public awareness about such resources.

5.1.18 Other Applicable Federal Regulations, Guidance, and Executive Orders

The following identifies other federal requirements potentially applicable to the Proposed Action:

Pollution Prevention Act of 1990. The Pollution Prevention Act recognizes that "pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally sound manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally sound manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner."

Resource Conservation and Recovery Act of 1976. The Resource Conservation and Recovery Act (RCRA) establishes a system for managing nonhazardous and hazardous solid wastes in an environmentally sound manner. Specifically, it provides for the management of hazardous wastes from the point of origin to the point of final disposal (i.e., "cradle to grave"). The RCRA also promotes resource recovery and waste minimization.

Safe Drinking Water Act of 1974. The Safe Drinking Water Act (SDWA) manages potential contamination threats to groundwater. It instructs the EPA to establish a national program to prevent underground injections of contaminated fluids that would endanger drinking water sources. Drinking water standards established under the SDWA are used to determine groundwater protection regulations under a number of other statutes (e.g., RCRA). Therefore, many of the SDWA requirements apply to DOE activities, especially cleanup of contaminated sites and storage and disposal of materials containing inorganic chemicals, organic chemicals, and hazardous wastes.

Toxic Substances Control Act of 1976. The Toxic Substances Control Act authorizes the EPA to secure information on all new and existing chemical substances and to control any of these substances that could cause an unreasonable risk to public health or the environment, including lead, asbestos, radon, and polychlorinated biphenyls.

EO 13175, Consultation and Coordination with Indian Tribal Governments. This EO requires federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications.

EO 13112, Invasive Species. This EO requires federal agencies to:

- *prevent the introduction of invasive species*

- *detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner*
- *monitor invasive species populations accurately and reliably, provide for restoration of native species and habitat conditions in ecosystems that have been invaded*
- *conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species*
- *promote public education on invasive species and the means to address them*

National Aquatic Invasive Species Act of 1996. The National Aquatic Invasive Species Act prescribes actions to combat invasive aquatic species.

Native American Graves Protection and Repatriation Act. The Native American Graves Protection and Repatriation Act and its implementing regulations (43 CFR Part 10) protect Native American human remains, burials, and associated burial goods.

Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990. The Non-indigenous Aquatic Nuisance Prevention and Control Act establishes a program to prevent the introduction of, and to control the spread of, introduced aquatic nuisance species.

EO 11988, Floodplain Management. This EO requires federal agencies to assess the effects that their actions may have on floodplains and to consider alternatives to avoid adverse effects and incompatible development on floodplains.

EO 11990, Protection of Wetlands. This EO requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the beneficial values of wetlands.

Soil Conservation and Domestic Allotment Act. The Soil Conservation and Domestic Allotment Act provides for soil conservation practices on federal land.

EO 12898 (1998). This EO requires federal agencies to address high and disproportionate environmental impacts on minority and low-income populations. Should potentially significant and adverse impacts attributable to a proposed project fall disproportionately on minority or low-income populations, environmental justice impacts would result and would therefore need to be mitigated or avoided.

5.1.19 U.S. Department of Energy Policies, Orders, and Memoranda

DOE Policy 141.1. DOE Management of Cultural Resources, dated May 2, 2011, establishes cultural resource management as a necessary part of DOE program implementation and establishes program responsibilities, requirements, and authorities.

DOE Policy 450.2A. Identifying, Implementing, and Complying with Environment, Safety and Health Requirements, dated May 15, 1996, sets forth the framework for identifying, implementing, and complying with environment, safety, and health requirements so work is performed in a manner that ensures adequate protection of workers, the public, and the environment.

DOE Policy 450.4. Safety Management System Policy, dated October 15, 1996, provides a formal, organized process whereby people plan, perform, assess, and improve environmental processes.

DOE Order 5400.1. General Environmental Protection Program, dated November 9, 1988, establishes environmental protection program requirements, authorities, and responsibilities for DOE operations to ensure compliance with federal, state, and local environmental laws, regulations, EOs, and internal policies.

DOE Order 5480.4. Environmental Protection, Safety, and Health Protection Standards, dated May 15, 1984, specifies requirements for the application of mandatory environmental protection standards. A DOE memorandum dated November 3, 1997, issued from the DOE Office of NEPA Policy and Assistance, emphasizes the need to consider environmentally and economically beneficial landscape practices, in addition to the above guidance, when developing NEPA documents.

Western Area Power Administration Order 430.1. Right-of-Way Management Guidance for Vegetation, Encroachments, and Access Routes, dated March 18, 2008, delegates and clarifies responsibilities to maintenance managers and establishes guidance and organizational support for maintenance and safe operation of Western rights-of-way.

Western Area Power Administration Order 450.1A. Environmental Considerations in the Planning, Design, Construction, and Maintenance of Power Facilities and Activities, dated November 21, 2001, describes environmental requirements that may be necessary to support maintenance activities.

Western Area Power Administration Order 450.3A. Transmission Vegetation Management Program, dated March 13, 2008, dictates Western's approach to transmission vegetation management.

Western Area Power Administration Order 6400.1. Establishment of Engineering Manual Series, dated February 5, 1980, describes standards for documents developed for guidance of Western's field activities.

Western Area Power Administration Power System Maintenance Manual, Chapter 11. Trimming and Felling of Trees and Brush Near Powerlines, November 2000 GRIP No.16, Transmission Line Right-of-Way Management, February 2001. This guide sets forth the procedures and practices for management of the transmission line rights-of-way, including easements and fee land owned by Western's Desert Southwest Region (DSW).

GRIP No. 19. Major Power System Component and Maintenance Program, May 2002. This guide outlines Western's DSW maintenance program for major power system components, including both scheduled maintenance practices and trigger-based maintenance practices, to ensure power system reliability, safety of employees, and cost effectiveness. The program is designed to meet the requirements of the customers, public safety, environmental sensitivities, and various power system organizations.

5.1.20 Federal Water Quality Regulations and Programs

Section 401 of the Clean Water Act. Activities covered by the U.S. Army Corps of Engineers' jurisdiction over wetlands (Clean Water Act Section 404 Department of Army permits) require Section 401 water-quality certifications from the State Water Resources Control Board. The water quality certification program requires that states certify compliance of federal permits and licenses with state water quality standards.

Section 404 of the Clean Water Act. Authorization from the U.S. Army Corps of Engineers is required in accordance with the provisions of Section 404 when dredged or fill material is discharged into waters of the United States, including wetlands. This includes excavation activities that result in the discharge of dredged material that could destroy or degrade waters of the United States. The repair and upgrade of access roads could impact waters of the United States.

Nationwide Permits. Nationwide permits (NWP) are a type of general permit issued by the U.S. Army Corps of Engineers that are designed to regulate with little delay or paperwork certain activities having minimal impacts. Western would perform right-of-way maintenance work under the NWPs listed in Table 5-1. The NWPs can be periodically proposed, issued, modified, reissued (extended), and revoked after an opportunity for public notice and comment. NWPs expire after 5 years. Western would perform operation and maintenance activities under the most up to date permit and comply with any modifications. All actions are performed on a limited basis, because of the limited resources available and because actions are intended to be performed over a period of at least 10 years. Thresholds of effect are incorporated into these NWPs, and Western would adhere to the thresholds as specified.

Table 5-1. Summary of Applicable Nationwide Permits

Permit and Title	Description	Thresholds	Notification Requirements
Nationwide Permit 3 – Maintenance	Activities related to: (i) the repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill; (ii) discharges of dredged or fill material, including excavation, into all waters of the U.S. to remove accumulated sediments and debris in the vicinity of, and within, existing structures and the placement of rip-rap; and (iii) discharges of dredged or fill material, including excavation, into all waters of the U.S. for activities associated with the restoration of upland areas damaged by a storm, flood, or other discrete event, including the construction, placement, or installation of	Under (ii), the removal of sediment is limited to the minimum necessary to restore the waterway in the immediate vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 ft in any direction from the structure. Under (iii), minor dredging to remove obstructions from the adjacent waterbody is limited to 50 cubic yards below the plane of ordinary highwater mark.	Under (iii), the permittee must notify the district engineer within 12 months of the date of the damage.

Table 5-1. Summary of Applicable Nationwide Permits			
Permit and Title	**Description**	**Thresholds**	**Notification Requirements**
	upland protection structures and minor dredging to remove obstructions in a water of the U.S.		
Nationwide Permit 12 – Utility Line Activities	Activities required for the construction, maintenance, and repair of utility lines and associated facilities in waters of the U.S. as follows: (i) utility lines: The construction, maintenance, or repair of utility lines, including outfall and intake structures and the associated excavation, backfill, or bedding for the utility lines, in all waters of the U.S., provided there is no change in preconstruction, maintenance, or expansion of a substation facility associated with a power line or utility line in non-tidal waters of the U.S., excluding non-tidal wetlands adjacent to tidal waters. (iii) foundations for overhead utility line towers, poles, and anchors: The construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the U.S. (iv) access roads: The construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the U.S., excluding non tidal wetlands adjacent to tidal waters.	Activities may not exceed a total of 0.5-acre loss of waters of the U.S.	The permittee must notify the district engineer if any of the following criteria are met: (a) mechanized land clearing in a forested wetland for the utility line right-of-way; (b) a Section 10 permit is required; (c) the utility line in waters of the U.S., excluding overhead lines, exceeds 500 ft; (d) the utility line is placed within a jurisdictional area(i.e., water of the U.S.), and it runs parallel to a stream bed that is within that jurisdictional area; (e) discharges associated with the construction of utility line substations that result in the loss of more the 0.1 acre of waters of the U.S.; (f) permanent access roads constructed above grade in waters of the U.S. for a distance of more the 500 ft.; or (g) permanent access roads constructed in waters of the U.S. with impervious materials. (Sections 10 and404).
Nationwide Permit 13 – Bank Stabilization	Bank stabilization activities necessary for erosion prevention.	The bank stabilization activity must be less than 500 ft in length.	Bank stabilization activities in excess of 500 ft in length or more than an average of one cubic yard per running foot may be authorized if the permittee notifies the district engineer.
Nationwide Permit 14 – Linear Transportation Projects	Activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., highways,	For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of more than 0.5 acre of waters of the U.S.; for	The permittee must notify the district engineer if any of the following criteria are met: (1) the discharge causes the loss more than 0.1 acre of waters on

Table 5-1. Summary of Applicable Nationwide Permits			
Permit and Title	**Description**	**Thresholds**	**Notification Requirements**
	railways, trails, airport runways, and taxiways) in waters of the U.S., including wetlands.	linear transportation projects in tidal waters, the discharge cannot cause the loss of more than 0.33 acre of waters of the U.S.	the U.S.; or (2) there is a discharge in a special aquatic site, including wetlands
Nationwide Permit 41 – Reshaping Existing Drainage Ditches	Discharges of dredged or fill material into non-tidal waters of the U.S., excluding non-tidal wetlands adjacent to tidal waters, to modify the cross-sectional configuration of currently serviceable drainage ditches constructed in waters of the U.S.	The reshaping of the ditch cannot increase drainage capacity beyond the original design capacity, nor can it expand the area drained by the ditch as originally designed.	The permittee must notify the district engineer if more than 500 linear ft of drain age ditch will be reshaped.

5.2 STATE

Stormwater and Discharge Regulations. The federal Clean Water Act and ADEQ regulate state water and stormwater quality. State permits, which could apply to the Proposed Action, include the Construction General Permit and the Arizona Pollution Discharge Elimination System (AZPDES). Staging areas, whether temporary or permanent, may also be subject to the AZPDES Permit.

5.3 LOCAL

5.3.1 Coconino National Forest Land and Resource Management Plan (1987, with amendments) – Best Management Practices and Direction

5.3.1.1 Road Maintenance and Management

Roads are to be operated and maintained in accordance with objectives, as specified in road prescriptions. Roads not needed for industry, public, and/or administrative use are closed and put to bed or returned to resource production through obliteration. Obliteration includes restoring the original land contour to the degree practical, scarifying, providing proper drainage, and revegetating with appropriate species.

Access roads are to be maintained at the lowest standard necessary for two-wheel drive pickups for removal of green firewood. Temporary closures using gates or barriers are implemented on roads that are unsafe for traffic, until the hazard is corrected. Roads will be closed seasonally using gates or barriers, where the road structural support is inadequate when the ground is wet and for resource protection or management. New timber sale roads designated for closure have gates, barriers, and signs planned as a cost of the project. Roads planned for closure or obliteration will be signed to inform users of the planned closure. Turnarounds are planned and will be developed at the point of closure.

Temporary roads that are for short-term use only will be obliterated, and signs for public service, direction, information, and safety will be provided.

5.3.1.2 Transportation System Planning and Inventory

Roads will be constructed/reconstructed, in accordance with FSM 7700 and FSH 7709.11. Intermittent and short-term roads that are used for longer than the dry weather season are constructed with enough surfacing to provide for erosion control and structural support for planned use. In the transportation plan, road densities, construction/reconstruction standards, location, maintenance structures, types of roads, and closure or obliteration are planned to meet the Project objectives, minimize resource impacts and ground disturbance, and provide for user safety.

Access Roads will be constructed/reconstructed to the lowest standard and density necessary for removing firewood, to minimize resource impacts and ground disturbance and provide for user safety. Road maintenance fund deposits from firewood permits will be used to help achieve needed maintenance, and new roads will be located out of riparian areas and water collecting features such as swales. However, in wet meadows existing roads may also be reconstructed and maintained in accordance with BMPs as defined in the Standards and Guidelines. Roads that are presently in these locations will be relocated or eliminated, and poorly located segments will be obliterated. To minimize bank disturbance and sediment production, stream courses will be crossed perpendicular to the flow. Road management and resource/wildlife protection will be emphasized as the overriding USFS policy.

5.3.1.3 Miscellaneous Forest Direction

Underneath transmission lines there may be a potential for Christmas tree production, firewood, wildings, pulpwood, and/or other miscellaneous forest products. The land is managed to attain products whenever possible. The choice of silvicultural objectives depends on the profile of the transmission line and the multiple-use objectives.

Requests for transmission corridors will be evaluated based on public need, economics, and environmental impacts of the alternatives. Existing corridors will be used to capacity with compatible utilities, where additions are environmentally and visually acceptable before evaluating new routes. Limit Road maintenance and road improvement activities will be limited in order to conserve Semi-primitive Motorized ROS characteristics, and road maintenance consistent with management area emphasis/ROS objectives will be provided.

5.3.2 Coconino County Comprehensive Plan (2003)

5.3.2.1 Utility Policies

Utilities infrastructure shall be located in a manner sensitive to environmental and scenic resources. Coconino County encourages placing utility distribution lines underground whenever possible; where above-ground utility infrastructure and facilities are installed, all efforts should be made to minimize environmental, visual, and aesthetic impacts. The County encourages cooperation between developers and the owners of utility corridors to use such corridors for trails, open space, and greenway features.

5.3.2.2 Conservation Guidelines

Assess impacts of local decisions in a landscape context. Although land use planning occurs at the landscape level, decisions are often made at the site level. However, because ecosystems and habitats are dynamic and interactive, land use changes often have effects beyond the boundaries of a site. Using the best available scientific information in making land use decisions will help ensure that the cumulative effects of human use do not compromise the landscape.

Make land use decisions that are compatible with the natural potential of the site and the landscape. Land uses should consider the physical, biological, cultural, aesthetic, and economic constraints of the site and the landscape. Uses that are compatible with the site's "natural potential" (its water, vegetation, and soil resources) are usually cost-effective in the long term. Incompatible uses, on the other hand, often destroy habitat or degrade resources, ultimately resulting in higher costs.

Avoid or mitigate for the effects of human use and development on ecological processes and the landscape. Avoid, minimize, or mitigate the negative impacts of a project by applying good planning and design principles at the appropriate scale. At a local scale, siting a structure without considering ecological processes may disrupt wildlife movement corridors or destroy a particular habitat. Regional impacts include changes to watershed processes caused by altering drainage patterns as part of a project.

Identify and preserve rare or critical ecosystems, habitats, and associated species. Rare or critical ecosystems support environmentally sensitive habitats and ecological processes that are key to the overall health and biological diversity of these ecosystems. To understand the factors that affect them, an inventory of critical components (vegetation and soil types, landforms, wildlife, and hydrologic and geologic features, among others) must be conducted. This information is required to make science-based land use decisions.

Minimize the fragmentation of large contiguous areas of habitat and maintain or restore connectivity among habitats. Many ecosystem processes require large areas of unfragmented habitat. If this habitat is fragmented into smaller pieces or disconnected from the larger landscape, it can become threatened, jeopardizing the survival of species. Because some species require different habitats during different seasons, maintaining connectivity is important between different habitat types. In addition, because land management and political boundaries do not define habitats and ecosystems, coordination between planners and resource managers is critical.

Minimize the introduction and spread of non-native species and use native plant species in restoration and landscaping. Non-native organisms often have negative effects on native species, as well as on the structure and functioning of ecological systems. The cost of preventing their introduction and spread can be far less than the cost of restoring the long-term damage they can cause to aquatic and terrestrial ecosystems. Likewise, it can also be less than the cost of controlling non-native species after they become established.

Conserve use of non-renewable and critical resources. To preserve the long-term health of our communities and economies, it is important to conserve critically important resources such as water, and to reduce our reliance on nonrenewable resources such as oil and gas.

Avoid land uses that deplete natural resources. Reducing or depleting resources such as water, soil, wildlife, or natural vegetation alters ecosystems in significant and fundamental ways. Depleting these resources disrupts natural processes in ways that are often irreversible.

Avoid polluting our communities and environment. Vibrant communities and ecosystems are either free of pollutants or they contain them at levels that are too low to disrupt natural processes. Land use decisions should limit the levels of pollution entering our landscapes.

Consider land use decisions over time horizons that encapsulate the natural variability of ecosystems. Because the factors affecting ecosystems vary, planning must consider the extreme and catastrophic events that occur over long periods. In the case of climate, such events would include floods, drought, and exceptionally high or low temperatures. For example, drought and flood cycles can differ in magnitude and time scale—El Niño/La Niña cycles occur every 7 to 10 years, Pacific Decadal Oscillations occur every 30 to 50 years, tropical storms occur very erratically and infrequently, and long-term climate changes occur over hundreds to thousands of years. The recent return to drier conditions illustrates the importance of not over-committing an important natural resource (such as water), which all organisms need to survive.

Evaluate the effects of land use decisions cumulatively and over time. Long-term changes caused by land use decisions can be delayed and cumulative. Impacts may not be apparent for years or decades; and in some cases, may not be recognizable until they reach a threshold when impacts are dramatic. A series of seemingly innocuous, site-specific changes in land use can combine to produce cumulative effects that cannot be attributed to a single, landscape-scale event.

SECTION 6 – COORDINATION AND REVIEW OF THE ENVIRONMENTAL ASSESSMENT

Western encourages the involvement of participating government agencies in the planning and preparation of any EA it pursues. As part of this EA, the USFS was invited and agreed to be a participating agency for this Project. In February 2011, Western provided the USFS with a memorandum of understanding (MOU), which was signed and returned to Western on March 1, 2011 (Appendix A).

The MOU states the purpose and need for the Project, indicating that Western must meet legal requirements, including compliance with the National Electric Safety Code, Western States Coordinating Council, and Western directives for protecting human safety and maintaining the reliability of the operation of the transmission system. The MOU emphasizes the importance of receiving feedback from the USFS throughout the NEPA process, especially comments and concerns on the draft and final EA documents.

Western involved the USFS throughout the NEPA process, including scoping, through the development of the draft and final EA. Comments received on the EA, such as those regarding the Proposed Action, Project conservation measures, environmental consequences, and cumulative effects, were considered by Western prior to the finalization of the document.

SECTION 7 – REFERENCES

This section lists the references cited in Sections 1 through 4.

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Appendix A USFS Correspondence

Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

MAR 01 2011

Mr. Mike Dechter
United States Department of Agriculture
Coconino National Forest
1824 S. Thompson St
Flagstaff, AZ 86001

Subject: Invitation to Participate as Cooperating Agency, Flagstaff-Pinnacle Peak Vegetation Management Project Environmental Assessment

Dear Mr. Dechter:

The U.S. Department of Energy (DOE) Western Area Power Administration (Western) Western is the lead agency on the environmental assessment for the project. The Project involves clear-cutting the right-of-way, as well as possible improvements and vegetation clearing on existing access roads (not Forest Service Roads). The Project could potentially affect the existing transmission line right-of-way, staging areas, and up to 30 miles of access roads that are not crowned and graded (such as Forest Service Roads). In addition, a 150-foot extension to the existing right-of-way (300 feet in width) will be sought to accommodate removal of "danger trees."

The purpose of the Project is based on both legal requirements and Western's desire to improve efficiency and reliability when situations such as emergency maintenance are necessary. Western must comply with the National Electric Safety Code, Western States Coordinating Council, and Western directives for protecting human safety and maintaining the reliable operation of the transmission system. In order to comply with these regulations and management practices, Western must remove vegetation along the right-of-way that could grow or fall into the transmission line and cause a safety hazard or a fire hazard that could result in electrocution, damage to the transmission line, or a power outage.

Western's proposed action for this vegetation management triggers a National Environmental Policy Act (NEPA) review process of the action. Western will be the lead agency for consultations with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act, the Arizona State Historic Preservation Officer, under Section 106 of the National Historic Preservation Act, Tribes and other interested parties.

The Council on Environmental Quality NEPA Implementing Regulations 940 CFR Part 1506.2) require Federal agencies to cooperate with state and local agencies to the fullest extent possible to reduce duplication between NEPA, state and local permitting requirements. We are inviting you to become a cooperating agency. Should you decide not to become a formal cooperating agency for the EA, we will still continue to keep your

agency informed of Project developments and you will receive the draft and final documents. Any concerns or comments you provide to us during the NEPA process will be fully considered in finalizing the EA and Finding of No Significant Impact (FONSI), if no significant impacts are found.

Western extends an invitation to Coconino National Forest to participate as a cooperating agency in development of the environmental assessment for the Flagstaff Pinnacle Peak Vegetation Management Project. We request you provide your response to the invitation of cooperating agency to Western by March 31, 2011. For additional information please contact Ms. Linette King of Western at (602) 605-2434 or via e-mail at LKing@wapa.gov.

Sincerely,

John Holt

John Holt
Environmental Manager

cc:
Amy Jerome
EPG
4141 North 32nd Street, Suite 102
Phoenix, AZ 85018

USDA United States Department of Agriculture | Forest Service | Coconino National Forest, Supervisor's Office
1824 S. Thompson Street
Flagstaff, AZ 86001-2529
Phone: (928) 527-3600
Fax: (928) 527-3620

File Code: 1950
Date: March 24, 2011

John Holt
Environmental Manager
Department of Energy
Western Area Power Administration
Po Box 6457
Phoenix, AZ 85005-6457

Dear Mr. Holt,

I would like to thank you for your letter inviting the Coconino National Forest to participate as a cooperating agency on the Flagstaff-Pinnacle Peak Vegetation Management Project. I understand the project is important to meet regulatory requirements for improved efficiency and reliability in emergency situations. I accept your invitation and look forward to working toward the joint development of an environmental assessment with the Western Area Power Administration.

Based on planning efforts and conversations between agency staff I understand it will be the role of the Forest Service to oversee the efforts of the development of the environmental assessment, provide data and information, provide guidance on Forest Service NEPA rules and regulations, participate in IDT meetings, and lead efforts to inform tribal interests through tribal consultation. Coconino National Forest staff will also participate in efforts to comply with the National Historic Preservation Act and the Endangered Species Act by reviewing surveys and findings, reviewing effects analysis reports, and communicating the potential impacts of the project to the State Historic Preservation Office and Fish and Wildlife Service for the purposes of project clearance.

Should you have any questions or additional project-related needs, please contact Mike Dechter (mdechter@fs.fed.us) or Judy Adams (jadams05@fs.fed.us).

Sincerely,

M. EARL STEWART
for Forest Supervisor

cc: Judy Adams, Craig J Johnson

Appendix B Cultural Resources Class III Survey Report

CULTURAL RESOURCES CLASS III SURVEY REPORT

Appendix B – Cultural Resources Class III Survey Report is a confidential appendix that will contain the results of the Class III pedestrian survey conducted for the Project. The Cultural Resources Class III Survey Report will provide information on the following:

- A description of the proposed action
- A summary of previous research and the results of literature and records searches
- A description of efforts used to identify cultural resources in the project area, including the qualifications of consultants employed to undertake the work
- A description of all cultural resources encountered
- Assessment and recommendations of NRHP eligibility for each property recorded
- An evaluation of the potential for the proposed action to directly or indirectly impact NRHP-eligible properties
- A discussion of mitigation/treatment alternatives to avoid or minimize impacts to NRHP-eligible properties

Appendix C List of Non-Ineligible Phase I Area Cultural Resource Sites

Table C-1. NRHP-eligible and Unevaluated Cultural Resource Sites in the Phase I Recording Area.				
Site Number	**Description**	**Eligibility**	**Potential Impact(s)**	**Mitigation**
AR-03-04-01-0207	Southern Sinagua field houses (2)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-0213	Southern Sinagua room block (1-2 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-0214	Southern Sinagua field houses (2)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-0218	Southern Sinagua room block (2-4 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-0220	Southern Sinagua room block (2-4 rooms), field house, petroglyphs, and cairns	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-0220	Southern Sinagua field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-0222	Southern Sinagua agricultural feature with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-0240	General Crook National Historic Trail (SR 260)	Non-contributing portion of eligible site	None	No further work is necessary
AR-03-04-01-1133	Multicomponent Apache roasting pit (not found) and historic trash scatter	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1135	Multicomponent site, 1-2 room masonry structure, historic trash scatter	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1138	Multicomponent site, prehistoric sherd scatter, historic foundation and cement trough	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1139	Historic quarry, platform, roads, and ditch	Determined eligible	Damage to historic features, ground disturbance	Manual vegetation removal
AR-03-04-01-1875	Archaic artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1877	Prehistoric lithic scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1878	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1879	Southern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1880	Southern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1881	Petroglyph panel and Southern Sinagua artifact scatter with tools	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-1882	Southern Sinagua room block (2 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1883	Southern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1884	Multicomponent site, Southern Sinagua artifact scatter with tools and historic can dump	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1885	Linear rock alignment, Southern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1886	Southern Sinagua artifact scatter with tools and grinding slick	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1887	Prehistoric lithic scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal

Table C-1. NRHP-eligible and Unevaluated Cultural Resource Sites in the Phase I Recording Area.				
Site Number	**Description**	**Eligibility**	**Potential Impact(s)**	**Mitigation**
AR-03-04-01-1888	Southern Sinagua field house, grinding slicks, and tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1889	Southern Sinagua field houses with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1890	Prehistoric lithic scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1891	Southern Sinagua field house, petroglyphs, and grinding slick	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-1892	Southern Sinagua field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1893	Southern Sinagua field houses (2) and rock feature	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1893	Southern Sinagua room block (3-6 room) and field houses (2)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1894	Southern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1895	Southern Sinagua field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1896	Southern Sinagua field house with tools	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1897	Southern Sinagua field house with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1898	Prehistoric lithic scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1899	Southern Sinagua agricultural terraces and field house, below Salome Fort	Recommended eligible	Damage to standing architecture, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-1901	Prehistoric petroglyphs and grinding slicks	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-1902	Southern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1903	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1904	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1905	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1906	Multicomponent site, Southern Sinagua artifact scatter and historic corral	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-01-1907	Southern Sinagua room block (2 rooms) and agricultural field	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-01-1908	Southern Sinagua room block (2-4 rooms), field house, petroglyphs, grinding slicks, and rock piles	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-1909	Prehistoric and Apachean petroglyphs	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-1910	Prehistoric petroglyphs	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-01-1911	Southern Sinagua room block (1-2 rooms)	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-02-0066	Historic Route 66 alignment	Non-contributing	None	No further work is necessary

Table C-1. NRHP-eligible and Unevaluated Cultural Resource Sites in the Phase I Recording Area.				
Site Number	**Description**	**Eligibility**	**Potential Impact(s)**	**Mitigation**
		portion of eligible site		
AR-03-04-02-0293	Northern Sinagua room block (8-10 room) and midden	Recommended eligible	Damage to standing architecture, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-02-0357	Northern Sinagua room block (1-2 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-0496	Northern Sinagua room block (5 room), midden, water retention basin	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-0768	Northern Sinagua pithouses (3+)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-0769	Northern Sinagua room block (4-5 rooms) and pithouses	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1233	Northern Sinagua artifact scatter	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1284	Northern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-1672	Historic Beale Wagon Road, US Army (1857-1863)	Non-contributing portion of eligible site	None	No further work is necessary
AR-03-04-02-1686	Northern Sinagua room block (9-12 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1697	Northern Sinagua field house	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1699	Northern Sinagua room block pithouse	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1700	Northern Sinagua field house, pithouse, and artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-1702	Northern Sinagua room block (5-8 room) with standing architecture, pithouses, possible Kiva	Recommended eligible	Damage to standing architecture, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-02-1816	Northern Sinagua artifact scatter	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1904	Northern Sinagua field house and water retention basin	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1909	Northern Sinagua water retention basin with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1914	Northern Sinagua room blocks (4-8 rooms, total)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1916	Northern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-1917	Northern Sinagua room block (4-6 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1918	Northern Sinagua room block (2 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-1925	Northern Sinagua room block (9-12 rooms), Kiva, midden, and water retention basin	Recommended eligible	Damage to standing architecture, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-02-2100	Northern Sinagua field house	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-2342	Northern Sinagua room block (6-8 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal

Table C-1. NRHP-eligible and Unevaluated Cultural Resource Sites in the Phase I Recording Area.				
Site Number	**Description**	**Eligibility**	**Potential Impact(s)**	**Mitigation**
AR-03-04-02-2489	Northern Sinagua room block (2 rooms), field houses (2)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-2490	Northern Sinagua field house	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-2492	Northern Sinagua room blocks (6-8 rooms and 1-2 rooms), field houses (2)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-2789	Northern Sinagua artifact scatter	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-2843	Northern Sinagua habitation site	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-2844	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-2853	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-2854	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-2871	Northern Sinagua pit house and agricultural features	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-3600	Historic Greenlaw North Railroad bed (AD 1900-1918)	Non-contributing portion of eligible site	None	No further work is necessary
AR-03-04-02-3655	Northern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-4073	Northern Sinagua field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-4419	Northern Sinagua room block (5-8 rooms)	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-5045	Northern Sinagua artifact scatter	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-5046	Northern Sinagua room block (5-8 rooms), Kiva, and semi-circular wall	Recommended eligible	Damage to standing architecture, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-02-5047	Northern Sinagua sherd scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5048	Northern Sinagua pit houses (2+)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-5139	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5140	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5142	Rock feature, Basque (ca. 1920s-1950s)	Unevaluated	Damage to standing architecture	Cultural monitoring and manual vegetation removal
AR-03-04-02-5142	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5145	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5146	Northern Sinagua habitation, one 1 room masonry field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-5147	Northern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5148	Northern Sinagua agricultural features with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5149	Northern Sinagua room block (4-6 rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal

Table C-1. NRHP-eligible and Unevaluated Cultural Resource Sites in the Phase I Recording Area.				
Site Number	**Description**	**Eligibility**	**Potential Impact(s)**	**Mitigation**
AR-03-04-02-5150	Northern Sinagua field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-5151	Northern Sinagua field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-02-5152	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-02-5154	Northern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0008	Historic dugout cave/store room (ca. AD 1910)	Recommended eligible, Criterion A	Damage to standing architecture	Cultural monitoring and manual vegetation removal
AR-03-04-04-0306	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0307	Archaic and Northern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0308	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0309	Prehistoric lithic scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0310	Protohistoric/Apachean lithic scatter with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-04-0311	Middle Archaic lithic scatter with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-04-0312	Archaic lithic scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0313	Southern Sinagua and Protohistoric/Apachean rock shelter with petroglyphs and grinding slicks	Recommended eligible	Damage to petroglyphs, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-04-0314	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0316	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0317	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-04-0318	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0750	Northern Sinagua artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0751	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0753	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0754	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0755	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0756	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0757	Prehistoric lithic scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0758	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0760	Sinagua field house with tools	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-05-0762	Prehistoric room block (4-6 rooms) and field houses (2-3)	Recommended eligible	Ground disturbance	Manual vegetation removal
AR-03-04-05-0763	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal

Table C-1. NRHP-eligible and Unevaluated Cultural Resource Sites in the Phase I Recording Area.				
Site Number	**Description**	**Eligibility**	**Potential Impact(s)**	**Mitigation**
AR-03-04-05-0764	Paleoindian artifact scatter with tools (possible Folsom point)	Recommended eligible	Ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-05-0767	Northern Sinagua artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0769	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0770	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0772	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0773	Rock ring, artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0774	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0775	Cohonina artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0776	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0778	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0779	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0780	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0781	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-05-0836	Not relocated, possible prehistoric field house, presumed destroyed	Unevaluated	None	No further work is necessary
AR-03-04-05-0837	Prehistoric artifact scatter	Determined eligible	Ground disturbance	Manual vegetation removal
AR-03-04-07-0142	Prehistoric artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AR-03-04-07-0143	Historic Mormon "Millville" lumber camp (AD 1876-1880s)	Recommended eligible	Damage to historic structures, ground disturbance	Cultural monitoring and manual vegetation removal
AR-03-04-07-1275	Archaic artifact scatter with tools	Unevaluated	Ground disturbance	Manual vegetation removal
AZ I:14:334(ASM)	Historic AT&SF Railroad	Determined eligible	None	Manual vegetation removal
FPP-113	Prehistoric room block (2 rooms) and pithouses (2-3)	Recommended eligible	Ground disturbance	Manual vegetation removal
FPP-115	Prehistoric artifact scatter with possible structure	Recommended eligible	Ground disturbance	Manual vegetation removal
FPP-116	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
FPP-117	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
FPP-118	Prehistoric room block (2 rooms), pithouse, and agricultural features	Recommended eligible	Ground disturbance	Manual vegetation removal
FPP-119	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
FPP-122	Prehistoric room block (4+ rooms)	Recommended eligible	Ground disturbance	Manual vegetation removal
FPP-124	Prehistoric pithouses (2-3)	Recommended eligible	Ground disturbance	Manual vegetation removal

Table C-1. NRHP-eligible and Unevaluated Cultural Resource Sites in the Phase I Recording Area.				
Site Number	**Description**	**Eligibility**	**Potential Impact(s)**	**Mitigation**
FPP-125	Prehistoric pithouses (2-3)	Recommended eligible	Ground disturbance	Manual vegetation removal
FPP-130	Prehistoric field house	Recommended eligible	Ground disturbance	Manual vegetation removal
FPP-133	Prehistoric artifact scatter and possible pithouse	Unevaluated	Ground disturbance	Manual vegetation removal
FPP-142	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
FPP-146	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
FPP-154	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal
FPP-158	Prehistoric artifact scatter	Unevaluated	Ground disturbance	Manual vegetation removal