



EAST FLAGSTAFF SUBSTATION

Draft Environmental Assessment

Prepared for



**United States
Department of Agriculture
Forest Service
Coconino National Forest**

Prepared by

EnviroSystems Management, Inc.

Environmental Planning • Regulatory Compliance

APRIL 2007

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Printed on recycled paper – April 2007.

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Executive Summary

The Coconino National Forest is considering a proposal from Arizona Public Service (APS) to construct an electrical substation and connect to an existing 69kV transmission line east of Flagstaff in Coconino County, Arizona. The 35.64-acre parcel under consideration for the substation is located just southeast of the Winona exit on Interstate 40 (I-40) within T21N, R9E, Sections 14, 24, 25, and 26 on the Winona, Arizona (photorevised 1974), USGS 7.5-minute quadrangle. The substation and associated facilities are needed to guarantee a reliable power source for the rapidly growing population in the City of Flagstaff and surrounding region.

This EA presents the results of an analysis of the direct, indirect, and cumulative environmental consequences of the No Action and the Proposed Action Alternatives. It also provides the supporting information for a determination to prepare either an Environmental Impact Statement or a Finding of No Significant Impact. The EA concludes that no substantial effects to environmental resources would occur as a result of the Proposed Action Alternative.

Chapter 1 – Purpose and Need

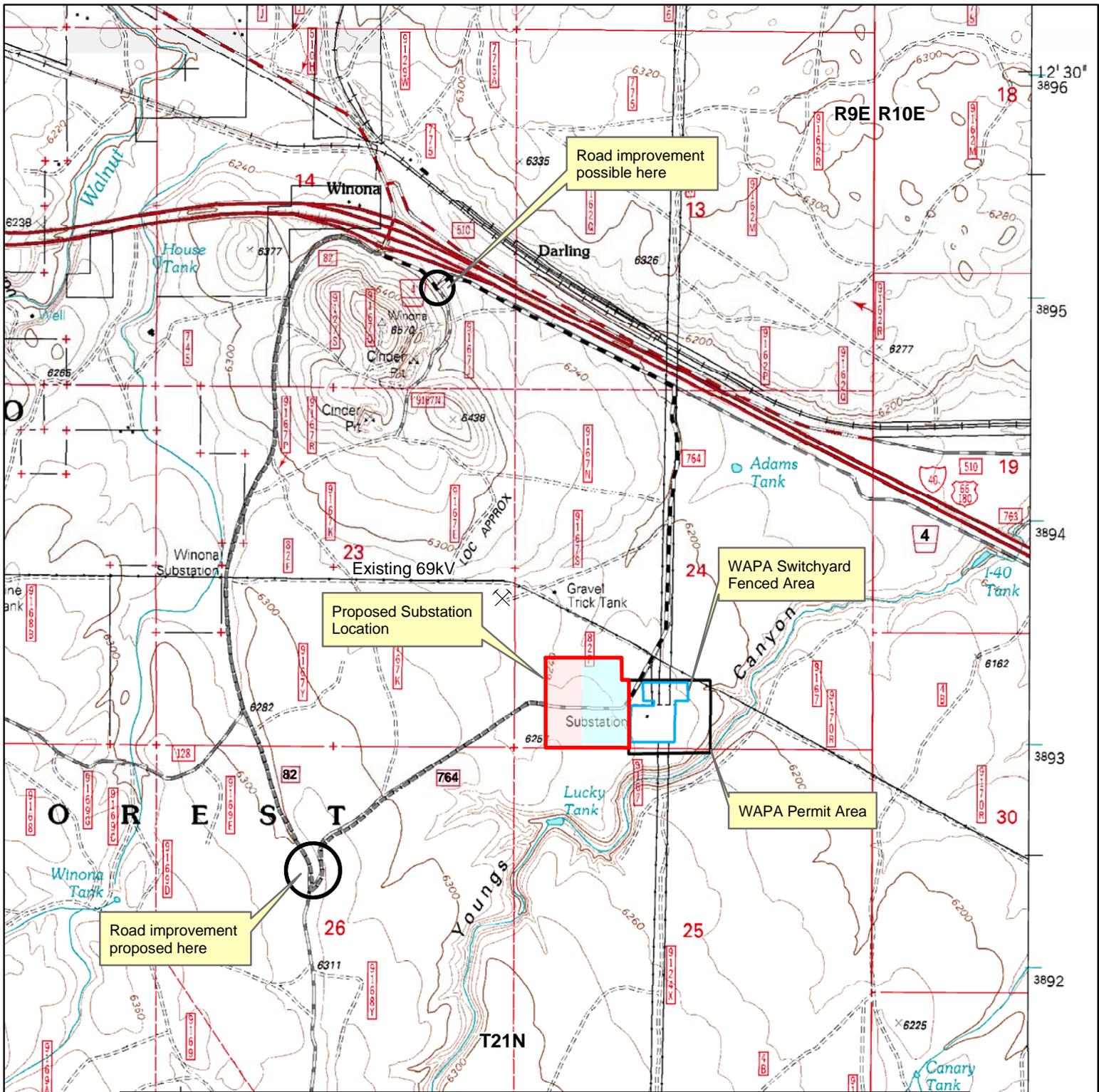
Document Structure

This Environmental Assessment (EA) has been prepared to describe and assess the environmental consequences that may result from the Coconino National Forest (CNF) approval of a proposal by APS to construct an electrical substation on approximately 35.64 acres of federal land in east Flagstaff, Coconino County, Arizona (Figure 1). This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the Proposed Action and No Action alternatives. The document is organized into four parts:

- **Purpose and Need:** The section includes information on the history of the APS electrical substation proposal, the purpose of and need for the project, and APS's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the project and how the public responded.
- **Comparison of Alternatives, including the Proposed Action:** This section provides a more detailed description of the Proposed Action, as well as alternative methods for achieving the stated purpose. These alternatives were developed based on issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative. The No Action Alternative that provides a baseline for evaluation and comparison of the preferred alternative that follows.
- **Affected Environmental and Environmental Consequences:** This section describes the affected environmental and environmental impacts of implementing the Proposed Action and other alternatives. This analysis is organized by physical resources and biological resources. The physical resources analyzed include air quality, soil and water quality, energy resources, heritage resources, recreation and public access, visual resources, and noise. The biological resources analyzed include vegetation, non-native plant species, wildlife, and special status species. Within each section, the affected environment is described first, followed by the effects of the alternatives.
- **Agencies and Persons Consulted:** This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- **Appendices:** The appendices provide more detailed information to support the analyses presented in the EA.

Background

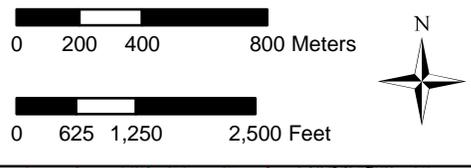
APS currently supplies electrical power to the Flagstaff area including portions of Coconino County via powerlines constructed in the 1960s. In 2004, the estimated population of the Flagstaff area was 61,270 and the population increased 2.3% in a year and is expected to continue to increase (Fischer 2005). The estimated population in Coconino County increased by 35% from 1990 to 2005 (Coconino County Profile 2005). In addition, around 800 new building permits are issued each year in Flagstaff, contributing to the increased demand on the power system. Current residential and commercial growth is expected to continue, with the population reaching an estimated 69,000 by 2010. This projected growth will likely exceed the existing capacity of APS's electrical delivery system by the year 2010.



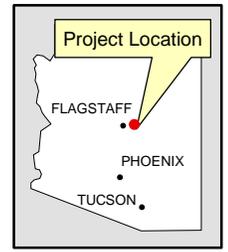
APS East Flagstaff Substation

EnviroSystems Project No. 1161-05

Figure 1. Map showing the proposed substation location, associated powerlines, and access routes.



Legend	
	Construction/Main access
	Transformer delivery access
	Phase 1
	Phase 2



Base map is Winona, AZ (1968, photorevised 1974), USGS 7.5' quadrangle.

1:24,000

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There are two 230kV sources that supply electrical power to Flagstaff and the surrounding communities. The primary source is the Cholla-Coconino 230kV line. This line connects the Cholla power plant, located near Holbrook in Navajo County, to the Coconino 230/69kV substation in Flagstaff. The second source is the Yavapai-Verde-Coconino 230kV line. This line connects the 500/230kV Yavapai substation, located near Prescott in Yavapai County, to the Coconino substation. The Coconino 230/69kV substation is therefore the only transmission source currently serving Flagstaff and surrounding communities in northern Arizona. The other APS substations in the area are for distribution purposes, supplying power directly to customers.

The project under consideration consists of a proposed 345/230/69kV substation site adjacent to a Department of Energy Western Area Power Administration (WAPA) 345kV switchyard south of Winona and east of Flagstaff (Figure 2). The substation would serve as an electrical transformer which will provide future additional circuits to the greater Flagstaff area. The substation would connect to the existing Coconino-Cholla 69kV powerline immediately north of the proposed substation location. The substation would reduce the power voltage from the 345kV WAPA transmission line to lower voltages for local transmission or distribution lines.

The 345kV WAPA electric transmission line and switchyard located south of Winona provides high-voltage power to various parts of Arizona. APS identified the WAPA switchyard as a feasible power tie-in source to the Flagstaff area for two reasons. The WAPA switchyard area would provide a flat topographic location with relatively low visibility. The proposed location is also within close proximity to the existing WAPA switchyard which would allow APS to tie-in to an existing power source and to utilize the existing WAPA transmission line right-of-way to the Flagstaff area. APS proposes to interconnect a 345/230/69kV substation with the WAPA switchyard. The eastern boundary of the proposed APS substation would border the western boundary of the fenced WAPA switchyard; this will allow for combined access to both substation yards, with the existing WAPA gate still being accessible. The interconnection will not exceed two spans in terms of pole placement, and a 345/230/69kV transformer will interconnect with WAPA's switchyard. The proposed project is consistent with the latest APS 10-year plan filed with the Arizona Corporation Commission (APS 2007).

APS would need to begin construction by mid-2007, with the energizing of the initial facilities by 2009. APS then anticipates completing build out of Phase 1 within the following 5 years, with final build out of Phase 2 within 10 years of the initial construction. Figure 2 depicts the configuration of Phases 1 and 2.

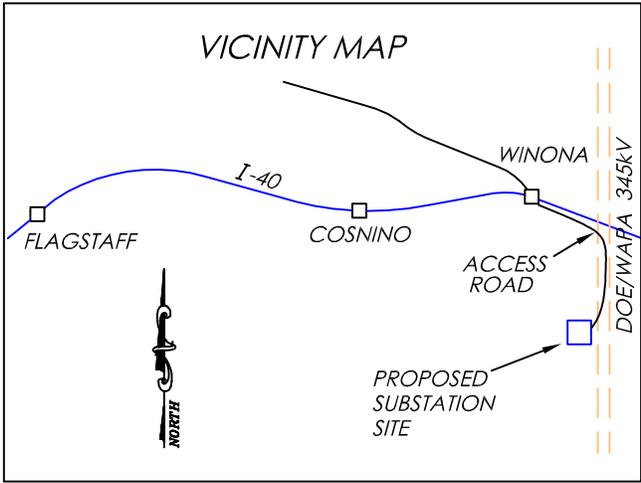
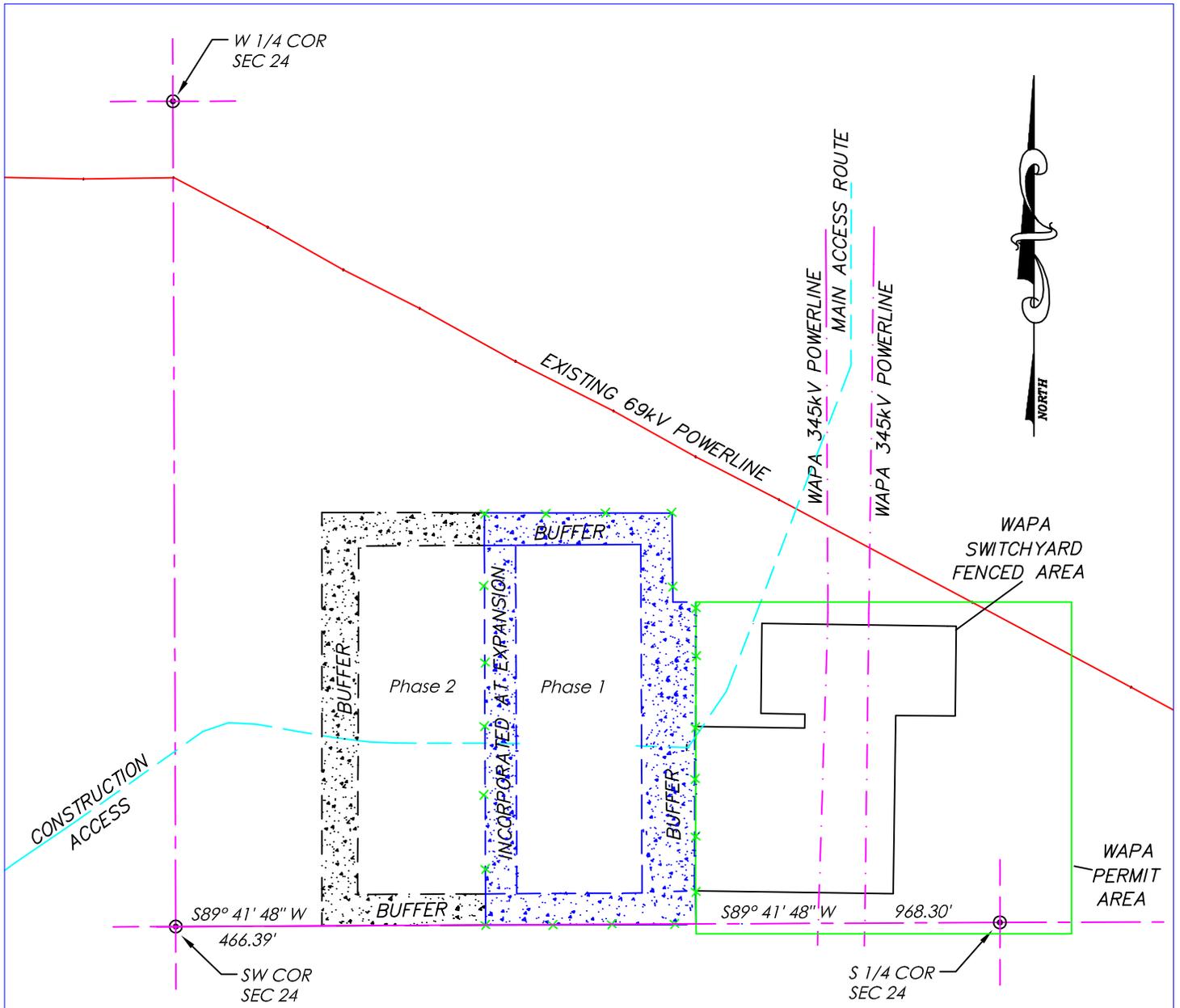


Figure 2. Detail of proposed substation site in relation to existing WAPA 345kV switchyard.

Legend	
	Substation Phase 1 (19.86 Acres)
	Substation Phase 2 (15.78 Acres)
	New Fence

Purpose and Need for Action

There is a need for improved reliability and continuity of the electric service for growing communities in and around Flagstaff and along the I-40 corridor. To address the projected growth in the Flagstaff area, APS has identified a need to upgrade the capacity of the power systems by constructing a new substation in the Winona area. The new electrical facilities are needed to maintain service reliability to Winona, Flagstaff, Williams, Grand Canyon, Tuba City, Munds Park, Sedona, and adjacent communities.

Analyzed separately from the Proposed Action, upgrades to the existing distribution lines would also be desirable to accommodate the extra power from the proposed substation following its completion. Some upgrades to portions of the existing powerlines have been completed in recent years because of the age of the lines. However, upgrades to the powerlines alone can only provide limited increases without the development of more substation capacity to provide more power to the lines. The proposed substation would provide a second transmission source into the Flagstaff area and would prevent service interruption for several thousand residents for an extended period of time, if the existing 230/69kV Coconino substation experienced an outage. An outage of the 230/69kV Coconino substation could cause prolonged outages to more than 20,000 customers in northern Arizona.

It is anticipated that if a new substation was established, then placement of more efficient, higher-capacity transmission lines, using the existing corridors, could be completed. This would carry enough power to supply the Flagstaff area well into the future, with the added benefit of not needing new powerline corridors. The substation would also provide reliable service to meet the needs of the increasing demand by allowing extra capacity for the customers it would serve.

Proposed Action

The Forest Service will decide whether or not to permit APS to:

- Construct a 345/230/69kV substation on a 35.64-acre parcel of the CNF next to and immediately west of the existing WAPA 345kV switchyard through issuance of a Forest Service special use permit
- Extend a 345kV transmission line two spans west from the existing WAPA switchyard
- Connect to the existing 69kV powerline immediately north of the proposed substation
- Conduct temporary improvements at two intersections at the junctions of existing Forest Roads 4 and 764 and 764 and 82 so that transformers and other equipment can be hauled to the site.

The substation would reduce power voltage from the 345kV WAPA transmission line to lower voltages for local transmission or distribution lines. The substation would include a 345/230/69kV transformer that would provide future, additional circuit(s) to Flagstaff through existing corridors. The proposed road improvements would allow for proper delivery of the materials, transformer, and other equipment to the construction site.

Based on the similar facilities built by APS in other areas, APS engineers have identified that the substation facilities will be built in two phases. Approximately 20 acres would be required to meet current needs for the initial construction of the substation (Phase I), and in order to address longer range needs, APS has included an additional 15 acres (35.64 acres total) in their application in order to allow for expansion (Phase II), which APS estimates will be required

within 10 years of the start of construction. The 100-foot buffer around the perimeter is included in this acreage. The permit will be issued for a thirty year term.

Decision Framework

The decision to be made is whether to implement the Proposed Action or an alternative to the Proposed Action, and whether further environmental documentation in an environmental impact statement is needed. The decision may also include mitigation measures that need to be applied in addition to those prescribed in the CNF Plan (1987). If the analysis demonstrates there are no significant impacts, the responsible official would record the decision in a Decision Notice and Finding of No Significant Impact (FONSI). The responsible official for this project is CNF's Forest Supervisor.

Public Involvement

A project notification mailer detailing the Proposed Action, project background, and NEPA process was mailed on September 20, 2006 to 99 members of the public with interest in projects related to the CNF and the project vicinity in particular (i.e., adjacent landowners, interested organizations, and other local agencies). The project was first listed on the Coconino Schedule of Proposed Actions on January 1, 2005 and has appeared on all successive quarterly issues to present.

A total of three comments were received in response to the mailer. One was from the Hopi Tribe's Cultural Preservation Office requesting a copy of the cultural resources inventory report when it becomes available, one was from a public member in favor of exploring other forms of energy, and one was from a public member requesting to receive any future mailings regarding the project.

Issues

Comments resulting from initial scoping were evaluated by the CNF interdisciplinary team (IDT) to identify significant issues. Significant issues are those directly or indirectly caused by implementing the Proposed Action and typically result in the creation of additional alternatives or the implementation of mitigation measures to address the identified concerns. Non-significant issues are identified as those:

- outside the scope of the Proposed Action;
- already decided by law, regulation, LRMP, or other higher level decision not to be significant;
- irrelevant to the decision to be made;
- conjectural and not supported by scientific or factual evidence; or
- significantly limited in geographic area, time (duration) or level of public interest.

The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..." No significant issues were identified by the Forest Service or the public during the scoping process for this project, therefore no additional alternatives were considered in detail.

Chapter 2 – Alternative Comparison

This chapter describes and compares the alternatives considered for the APS East Flagstaff Substation project. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social, and economic effects of implementing each alternative.

Alternatives Considered but Eliminated from Detailed Analysis

In addition to the current proposed substation location, alternate sites for the substation were evaluated. However, alternate locations are limited and restricted by the availability and proximity of extra high voltage transmission lines which are needed to tie-in to an existing power source. Alternate locations would require a new footprint across pristine land for transmission lines connecting to the existing WAPA switchyard. The proposed location for the substation was selected as the preferred alternative due to the close proximity to high voltage transmission lines at the existing WAPA switchyard, the opportunity to route future powerlines to Flagstaff utilizing the existing previously disturbed WAPA transmission line right-of-way, and the flat topography of the proposed site.

Alternatives Considered in Detail

Alternative 1 – No Action

Under the No Action Alternative, CNF would not approve the construction of an APS electrical substation on 35.64 acres of federal land. The parcel would remain in federal ownership, would be administered by the USFS, and would continue to be managed as national forest.

Alternative 2 –The Proposed Action

Under the Proposed Action, CNF would allow APS to construct an electrical substation and associated facilities on a 35.64-acre parcel of federal land in two phases over a 10-year period of time. APS would continue to provide reliable power to meet the current and projected electrical energy needs for the growing City of Flagstaff and surrounding communities.

Summary of Effects and Mitigation Measures

The following table compares the effects of the alternatives considered in detail in this EA. Proposed mitigation measures and Best Management Practices (BMPs) to minimize effects are included where necessary.

Table 1. Alternative Comparison Summary of Affected Resources

Resource	Alternative 1 No Action	Alternative 2 Proposed Action
Air Quality	No effect.	Construction-related activities will degrade air quality on a short-term basis. Regular watering of the site during construction will reduce this effect.
Energy Resources	Given the existing power capacity, power demands by residents of Flagstaff and the surrounding areas would likely exceed supply in the future.	Residents of Flagstaff and surrounding areas will be supplied with more reliable power in the short-term, and in the long-term projected energy requirements associated with projected growth will be met.
Heritage Resources	No effect.	Mitigation through avoidance and/or data recovery will occur with regard to all National Register-eligible historic properties.
Noise	No effect.	Noise during construction may be heard by residents in the vicinity, mostly in relation to construction vehicles entering and leaving the site. The substation location is so remote that actual construction-related noise will most likely not be heard by area residents.
Recreation and Public Access	No effect.	Recreational use of the area other than predominately OHV use by area residents is from the use of an abandoned rock quarry pit as an informal shooting range. Access to the pit is via FRs 4 and 764 which will remain open during construction and operation of the substation.
Soil and Water	No effect.	BMPs will alleviate any issues related to stormwater run-off during pre- and post-construction. Erosion will likewise be controlled through BMPs. These BMPs will include native reseeding in areas where possible and graveling access roads and areas within the fenced substation site.
Visual Resources	No effect.	Construction of the substation will degrade visual quality in the area immediately surrounding the parcel. However, the development of the parcel is consistent with the designated Forest Service Visual Management System (VMS) for the site of 3C/MM where 3=lowest sensitivity level; C=minimal variety of landform, rock form, vegetation, lakes, streams; and MM=maximum modification allowed. In addition, the project is consistent with existing use in the area due to the presence of the WAPA substation immediately adjacent to the subject parcel.
Vegetation	No effect.	Vegetation on about 35.64 acres will be cleared for construction of the substation and the surrounding buffer area. Currently, roughly 5 acres of fuelwood cutting has occurred on the project site. The loss of vegetation is minor relative to the abundant similar vegetation community in the project vicinity.

Resource	Alternative 1 No Action	Alternative 2 Proposed Action
Non-Native Species	No effect.	The construction activities associated with this project have the potential to spread noxious weeds. However, the potential to spread weeds will be mitigated by implementing the BMPs as outlined in the Coconino, Kaibab, and Prescott National Forest Noxious and Invasive Weed Strategic Plan, 1998, amended 2002. Therefore, there will be no effect.
Wildlife	No effect.	Wildlife occurring on the site mostly in the form of rodents and some native bird species will be dislocated into adjacent areas. Abundant similar habitat occurs in the region, and impacts to these species will be minimal.
Special-status Species	No effect.	No effect. No special status species or their habitats will be affected by the Proposed Action.

Chapter 3 – Affected Environment and Environmental Consequences

This section summarizes the affected environment in the project area, as well as, the environmental consequences of implementing the proposed alternatives. The direct, indirect, and cumulative impact of implementing the No Action Alternative and the Proposed Action Alternative are described under each resource of the affected environment. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by the action and occur later or farther away but are still reasonably foreseeable. Cumulative impacts are the effects on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Major issues define the scope of the environmental concern for the proposed project. These topics of environmental concern are discussed in Chapter 2 (Table 1) and are addressed under the environmental resources and uses analyzed in this chapter, which include air quality, energy resources, heritage resources, noise, recreation and public access, soil and water, visual resources, vegetation, non-native vegetation, wildlife, and special-status plant and wildlife species. Mineral resources, socioeconomics, and environmental justice issues were not evaluated due to the lack of relevance to the proposed project (i.e., there would be no direct, indirect, or cumulative impacts).

Air Quality

Affected Environment

The project area is an attainment area with respect to air quality standards (ADEQ, <http://www.azdeq.gov/environ/air/plan/notmeet.html>, accessed 2006). Attainment areas have no recorded violations of the federal health standards for ambient air quality. All areas of the country that meet federal health standards for air quality are designated Class I or II under the Clean Air Act of 1963, as amended. Congress designated many national parks and wilderness areas as Class I areas, which receive the greatest degree of protection against air quality degradation. All other areas are classified as Class II areas and must meet National Ambient Air Quality Standards (ADEQ, <http://www.azdeq.gov/environ/air/plan/notmeet.html>, accessed 2006). The project area lies on top of the Colorado Plateau and is classified as a Class II air shed that meet the criteria for attainment. Ground disturbance from construction activities can cause localized impacts to air quality through fugitive dust and particulates.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under the No Action Alternative, the special use permit would not be authorized by the CNF and current uses, specifically in the form of OHV activity and undesignated shooting ranges, would continue to directly impact local air quality from emissions and fugitive dust. While during dry periods fugitive dust increases, air quality within the planning area would continue to attain Class II standards.

Alternative B (Proposed Action)

Once the substation construction begins, construction activities involving heavy equipment use and ground disturbance would result in short-term, direct impacts to local air quality due to increased emissions and fugitive dust. Appropriate dust abatement procedures, such as watering the construction site, would be undertaken to reduce impacts to air quality. The localized effects would be at a level that would not affect existing airshed classifications. No cumulative impacts to air quality are foreseen due to lack of other ground-disturbing or emission generation activities occurring in the area.

Energy Resources

Affected Environment

The project area is located next to an existing electrical substation with associated facilities and transmission lines. The existing substation plans to provide power to the proposed substation, and allow APS to upgrade power transmission through the existing powerline corridor.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under Alternative A, APS would not receive power from the existing WAPA substation facility, nor would they upgrade power capacity on the existing powerline corridor for transmission to the City of Flagstaff and surrounding areas. The current substation would conduct their business as usual. APS would not meet the projected energy demands for the City of Flagstaff, and would likely need to look elsewhere to construct a facility to do so. Indirect impacts may be in the form of obtaining power from different sources to meet needs on a small scale. Additionally, unreliability of APS power may increase with growth in the region. Subsequently, growth may be inhibited.

Alternative B (Proposed Action)

The direct impact of the Proposed Action would be increased power capacity available to the City of Flagstaff and surrounding areas to meet projected growth. Indirect and cumulative impacts may be in the form of increased development and associated activities in some areas due to the availability and reliability of power.

Heritage Resources

Affected Environment

A cultural resource files search at CNF Supervisor's Office revealed that the project area (as well as the surrounding land) had been previously inventoried for cultural resources during four projects, and that seven archaeological sites had been identified in the project area and along the FRs that will provide access to the project area (Sites AR-03-04-02-1816, AR-03-04-02-1817, AR-03-04-02-1818, AR-03-04-02-1954, AR-03-04-02-1956, AR-03-04-02-4419, and AR-03-04-

02-4563). A full pedestrian survey of the entire project area as well and the surrounding land revealed four new sites (AR-03-04-02-4563, AR-03-04-02-4564, AR-03-04-02-4565, and AR-03-04-02-4566) (ESM 2006a). All eleven sites (seven previously identified and four new) are considered eligible for listing on the National Register of Historic Places (NRHP) under Criterion d. The project area, transmission line tie-in locations, and FR improvements and reroutes have been reconfigured to avoid all but one site (AR-03-04-02-4563).

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under the No Action Alternative, heritage resources identified within the project area would remain vulnerable to disturbance due to the current public uses of the property, including the use of OHVs. The integrity of identified sites in the project area would thus continue to be compromised which would contribute to the cumulative inadvertent degradation of sites in the region.

Alternative B (Proposed Action)

Long-term impacts would be the loss of one heritage resource site identified within the project area. Thus, proper mitigation measures would be implemented prior to development of the substation. The CNF, in consultation with the State Historic Preservation Officer, would develop an appropriate data recovery plan. Implementation of agreed upon measures would ensure that the information potential of the site is exhausted prior to its being impacted by development. These mitigation efforts in combination with avoidance measures would result in the Proposed Action having no effect on heritage resources. Cumulative effects to heritage resources would include all other heritage resources that have been lost or mitigated near the project area as well as those inadvertently degraded through public use of forest land.

Noise

Affected Environment

The existing WAPA electrical substation is the main generator of noise near the proposed project area. However, the WAPA substation can be heard up to approximately 200 feet from the substation, and the large mature juniper trees offer a noise buffer to forest users traveling on the forest roads. Additional noise in the surrounding area may be heard from OHV and unofficial shooting range use of an old cinder pit in the area. This noise fluctuates on a daily basis, particularly the weekends, and seasonal basis when hunting may increase forest use.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

No direct, indirect or cumulative effects are anticipated under the No Action Alternative. The existing substation and associated facilities in the project vicinity would continue to be the main source of noise on the soundscape.

Alternative B (Proposed Action)

The operation of construction equipment associated with the Proposed Action Alternative would cause a temporary, localized increase in noise levels. However, the noise would be similar to that caused by maintenance activities to the existing WAPA substation and transmission line. In addition, mature juniper trees which may serve as a partial noise buffer for these short disturbances. No residences occur within the audible range of the substation. Cumulative impacts from noise, as a result of the Proposed Action, are expected to be negligible and short term due to temporary maintenance activities.

Recreation and Public Access

Affected Environment

The project area is currently accessed by the public via FRs 4, 764, and 82. Principle use of the area is in the form of OHV use and target shooting at an adjacent cinder pit. Residents utilize FR 82 for access to their homes and FR 4 is used as a frontage road along I-40 and provides access to other areas east of the project area. FR 764 is a loop from FR 82 to FR 4 and provides access to the cinder pit, the WAPA substation, and the project area. The location of the substation will interrupt travel on the loop (FR 764), however travel to the undesignated shooting pit, WAPA substation and the project area will be maintained.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under the No Action Alternative, the recreational use and access of the area will remain unchanged. Use of the roads in the area for recreational access and OHV use will continue. Some roads in the area are on the CNF's list for decommissioning and use may be restricted in the future for this reason. There will be no effects to area residents for access to their homes.

Alternative B (Proposed Action)

Under the Proposed Action some improvements to FR 4 and FR 82 are proposed. The intersection of FR 82 and FR 764 will be temporarily realigned so that the large truck transporting the transformer to the site will be able to make the turn onto FR 764. The temporary realignment will be obliterated after construction is completed, and the area restored to the original alignment. The obliterated temporary road will be reseeded with native grasses. The temporary realignment will allow for better access for construction equipment to the site during substation construction. This will not directly or indirectly affect recreational access of the area. However, the placement of the substation will block a portion of FR 764. The interruption of the loop (FR 764) from FR 82 to FR 4 will affect some users of the area that prefer to use this loop. Due to the high densities of roads in the surrounding vicinity, the Forest Service decided that the rerouting of FR 764 would not be necessary. Access to homes, the undesignated shooting pit, WAPA substation and the project area will be maintained.

Soil and Water

Affected Environment

Topography in the project area is generally level with slopes of less than 5 percent. The elevation range on the entire project area is between 6,200 and 6,380 feet. Substrates in the area are basaltic mixed with clay. The area is in the Rudd-Bandera-Cabeza Association where soils are defined as excessively drained and are formed in residuum and alluvium weathered from basalt, andesite, ash flow tuffs, cinders, and other related basaltic rocks (Hendricks 1985). Soils have been disturbed along the forest roads by frequent OHV use, which has led to erosion and a loss in soil productivity. The amount of actual soil lost due to erosion is unknown.

There are no perennial streams, permanent surface water, wetlands, springs, or seeps in the project area. Young's Canyon contains an ephemeral stream and is located approximately 1/8-mile from the project area.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under the No Action Alternative, soil erosion on the forest roads would continue due to on-going OHV use within the project area. Overall soil productivity would also continue to decline in localized areas. Such erosion could lead to the delivery of sediment and potential contaminants via stormwater conveyance from the project area to Young's Canyon, approximately 1/8-mile away. Cumulative impacts would consist of continued erosion and soil loss, as well as, sediment loading into washes leading to Young's Canyon, from OHV use of the area which may increase over time.

Alternative B (Proposed Action)

Building the substation and associated facilities would result in soil compaction, disturbance, and loss; however, the amount would be minimized through implementation of a stormwater pollution prevention plan (SWPPP) and best management practices (BMPs), which would include retention basins in designated areas to prevent flooding to adjacent areas. Such plans and practices would also prevent or reduce the amount of sedimentation moving towards Young's Canyon during storm events. Long-term and cumulative impacts under the Proposed Action would not be substantial and would be similar to those described under Alternative A.

Visual Resources

Affected Environment

The project area is located approximately one mile south of I-40, and is 1/8-mile north of Young's Canyon. The project site is adjacent to an existing WAPA switch yard, associated facilities and transmission lines. The United States Department of Agriculture provides a detailed Visual Management System (VMS) for assessing the impacts a project may have on visual quality (USFS 1974). The project area falls within the area VMS designation of 3C/MM (USDA 1987)

where 3=lowest sensitivity level; C=minimal variety of landform, rock form, vegetation, lakes, streams; and MM=maximum modification allowed. A detailed description of the various classification criteria is presented below.

Character Type and Variety Class

All landscapes within the National Forest System are classified by “character type” that defines the broad regional context for the appearance of the landscape, and by “variety classes” that define the relative “attractiveness” of the landscape within each character type (USDA 1974). Accordingly, the project area is classified in Class C which is considered minimal in visual quality due to little change in form, line, color, and texture. Characteristics of the project area include low slopes, and pinyon-juniper woodlands. No water features are present.

Distance Zones

Distance zones are divisions of a particular landscape being viewed. The three distance zones are foreground, middleground, and background. Foreground is considered the area seen within ¼ to ½ mile of the observer. In this case, the project foreground would be viewed from FR 764 in which it can only be viewed in the line of site of FR 764 for a short distance where the road turns to the east. On FR 764, the substation is masked by the presence of mature pinyon and juniper trees, and the substation would not obstruct the visual experience along FR 764. Middleground extends from the foreground to 3 to 5 miles from the observer. The middleground is evaluated from FRs 4 and 82, and I-40 which has an average annual daily traffic volume of 17740 (ADOT, <http://tpd.azdot.gov/datateam/aadt.php>, accessed 2006) at the exit nearest the project (Exit 211). The FRs are not heavily traveled, but are used by OHV users and as access to other forest areas by hunters and other recreationalists. The substation would not be visible from these road corridors; however, the existing WAPA transmission lines are visible from I-40. The background extends from middleground to infinity, and the substation would not be visible at this zone.

Sensitivity Levels

Sensitivity levels are a measure of people’s concern for scenic quality. These are determined for travel routes through USFS lands on system roads, trails, and for “use areas” and residences within and adjacent to USFS lands. The project area is located south of I-40, and access to the site exists via FRs 4, 82, and 764. However, activities such as hunting and wildlife viewing may draw forest visitors to the area, making scenery of concern to some users. The project area is considered to have a Sensitivity Level 3, which in the USFS rating system that reflects a low level of concern for scenic quality by those likely to view the area.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under the No Action Alternative, there would be no direct or indirect impacts to visual quality as the project area would remain undeveloped. Due to the presence of an existing substation, the visual quality objectives managed by the CNF would likely remain consistent with the current 3C/MM classification.

Alternative B (Proposed Action)

In the short term under Alternative B, impacts the visual characteristics of the project area would be similar to those described under Alternative A. Once construction of the substation and associated facilities begins, the project area would be altered from the natural characteristics of the area. However, the substation would only be visible along a portion of FR 764 and the majority of the station would be masked by large pinyon and juniper trees. The overall visual alteration of the project area would continue to meet the CNF management goal of 3C/MM.

Vegetation

Affected Environment

The vegetation in the project area is consistent with the plant community in the Great Basin Conifer Woodland biome (Brown 1994). The area can be further defined as pinyon-juniper (PJ) woodlands with Utah juniper (*Juniperus osteosperma*) and pinyon pine (*Pinus edulis*) as the dominant trees. Dominant shrubs include rabbitbrush (*Chrysothamnus nauseosus*), snakeweed (*Gutierrezia sarothrae*), and a few scattered cliffrose (*Purshia mexicana*). The dominant grass at the site is blue grama (*Bouteloua gracilis*). There are a few whipple cholla (*Opuntia whipplei*) that occur in the area, as well.

There are approximately 630,000 acres of PJ woodlands on the CNF (USDA 2002). Although the acreage of the PJ on the CNF is stable, the overall health of the woodlands is slightly declining. A local study revealed that drought contributed to 50% mortality of mature pinyons, while only 7% of junipers died, allowing chances for the juniper component to increase (Mueller et al. 2005).

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under Alternative A, in the immediate future, the vegetation would not change. The vegetation in the area may continue to lose vigor if insufficient water continues to force the plant community to compete for this resource. The Forest Service will continue to manage the 35-acre parcel according to the Coconino Forest Plan (USDA 1987).

Alternative B (Proposed Action)

Under the Proposed Action Alternative, nearly all of the vegetation on the 35-acre parcel will be lost due to the construction of the electrical substation and associated facilities over a ten year period of time. Less than 0.01 % of the available PJ woodlands on the CNF will be lost. Several large pinyon pines and Utah juniper trees will be removed. In addition, small- to medium-sized shrubs will be removed in the project area.

Non-native Species

Affected Environment

The entire project area, including the road improvement areas, was surveyed for noxious and invasive weeds. A small population (10 square feet) of cheatgrass (*Bromus tectorum*) is located near the junction of FRs 4 and 9167N. Cheatgrass is identified as a Class C invasive species by the CNF. Class C invasive species receive the lowest priority, and the long-term management emphasis is to contain these species (Phillips et al. 1998). Construction activities have the potential to spread noxious weeds; however, the CNF requires the implementation of BMPs defined in the Coconino, Kaibab, and Prescott National Forests Noxious and Invasive Weed Strategic Plan (USDA 2005) for any activities that cause ground disturbances on CNF lands.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under Alternative A, no construction activities would occur on the 35-acre parcel proposed for the electrical substation. Therefore, the chance of the spread of noxious weeds via transport on construction vehicles would not occur. The continued recreational use of the forest could potentially cause the spread of noxious weeds. The spread of noxious weeds would continue to be managed by the CNF use of BMPs.

Alternative B (Proposed Action)

If the Proposed Action takes place, the construction related activities have the potential to spread noxious weeds via the transport of seeds through construction vehicles. However, APS will be required to use BMPs to reduce the chance of spread of noxious weeds. Cumulative effects would include the potential to spread weeds during maintenance activities associated with the substation. However, the effects would be minimal because APS would be required to utilize BMPs in the future, as well.

Wildlife

Affected Environment

The types of wildlife common to the project area are those species present in the Great Basin Conifer Woodland biome including elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), Arizona bushy-tailed woodrat (*Neotoma cinerea arizonae*), pinyon mouse (*Peromyscus truei*), gray flycatcher (*Empidonax wrightii*), pinyon jay (*Gymnorhinus cyanocephalus*) and the sagebrush lizard (*Sceloporus graciosus*) (ESM 2006b). The presence of the existing WAPA electrical substation located to the immediate east of the proposed project area may have resulted in lower densities of wildlife species in the immediate vicinity.

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under the No Action Alternative, noise from the existing WAPA electrical substation and transmission lines may continue to cause some avoidance of the area by wildlife not habituated to

the site conditions. The habitat adjacent to the existing substation would continue to be available to wildlife in the area. However, the quality of the habitat immediately adjacent to the existing substation would likely be slightly less desirable due to the close proximity to the substation.

Alternative B (Proposed Action)

The existing substation in the proposed project vicinity generates noise, lowering the quality of wildlife habitat in the proposed project area. If the Proposed Action takes place, long-term impacts would include the direct loss of 35 acres of lower quality wildlife habitat in the immediate project area. If individuals are present in the immediate project area, noise from construction activities may cause wildlife to avoid using the project area. However, the effects would not be substantial when considering the abundant undisturbed PJ habitat in the surrounding area. Furthermore, the use of the existing transmission line corridor reduces the footprint of the proposed substation, and minimizes effects to wildlife. Cumulative effects would include minor noise disturbances associated with maintenance of the site. However, the effects do not exceed the existing minimal disturbance from the WAPA substation.

Special Status Species

Affected Environment

The project area does not contain habitat for species federally listed by the United States Fish and Wildlife Services (USFWS). However, there is some suitable habitat for two Regional Forest Sensitive species including marginal winter foraging habitat for the northern goshawk (*Accipiter gentiles*) and three cliffrose shrubs that serve as habitat for the early elfin butterfly (*Incisalia fotis*). In addition, there is habitat for three management indicator species (MIS) including, elk, mule deer, and the juniper titmouse (*Baeolophus griseus*) (ESM 2006b).

Direct, Indirect, and Cumulative Impacts

Alternative A (No Action)

Under the No Action Alternative, noise from the existing electrical substation and transmission lines will likely continue to cause wildlife avoidance of the immediate area. No habitat for special status species would be lost or fragmented. Forest Service Sensitive species and MIS habitat and occurrence would not change as a result of the proposed project.

Alternative B (Proposed Action)

Under Alternative B, direct impacts to Forest Service Sensitive species and MIS would be the loss of approximately 35 acres of habitat that is adjacent to an existing electrical substation. The habitat loss is not substantial when compared to the abundance of similar, if not better quality habitat in the project region. It is not likely that direct loss of individuals will occur but avoidance of the site during and after construction indirectly affects these species. Cumulatively there would be no substantial effects to Forest Service Sensitive species or forest-wide trends to MIS populations as a result of this project (ESM 2006b).

Chapter 4 - Consultation and Coordination

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

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