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ENVIRONMENTAL ASSESSMENT

DOE/EA-0371

SOUTH MICROWAVE COMMUNICATION FACILITIES

U.S. Department of Energy
Western Area Power Administration
Salt Lake City Area Office
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SUMMARY

PURPOSE AND NEED

Western Area Power Administration (Western) is proposing to construct, operate, and maintain eight microwave repeater stations in southwestern Colorado, southeastern Utah, and northern Arizona, in order to meet the minimum fade criteria established by the Western Systems Coordinating Council (WSCC) for the operation and protection of electric power systems. The proposed microwave facilities would increase the reliability of communications.

ALTERNATIVES

Alternatives to the proposed action which were considered include no action, use of leased telephone lines, and other site locations. The no action alternative was rejected since the system would not meet WSCC criteria for microwave reliability. The leased telephone lines alternative was rejected because of high costs and the unreliability of commercial telephone circuits when used as a part of power system control. Other site locations were rejected by Western as either too costly or less technically attractive.

PROPOSED ACTION

The proposed project would consist of constructing eight microwave facilities, each of which would include a self-supported lattice tower, an equipment building, a propane tank, distribution lines to provide electric power to the sites, and access roads to the sites. The facilities would be constructed in San Miguel and Montezuma Counties in Colorado, San Juan County, Utah, and Navajo, Apache, Coconino, and Yavapai Counties in Arizona.

AFFECTED ENVIRONMENT

The project area is located in the Colorado Plateau geographic province and is characterized by arid-to-semi-arid conditions with hot summers and mild-to-cold winters, depending on elevation. The lands directly affected

by the project are administered by the U.S. Bureau of Land Management, the Navajo Nation, and the U.S. Forest Service. Vegetation on the sites includes ponderosa pine forests, pinyon pine-juniper scrublands, bunch grass grasslands, and desert pavement scrublands.

Wildlife species vary with vegetation composition, density, and groundcover. Federally-listed endangered and threatened species which may occur include the bald eagle, peregrine falcon, and black-footed ferret.

The predominant land use in the project area is livestock grazing.

ENVIRONMENTAL CONSEQUENCES

No significant impacts were identified as a result of the environmental studies. Low impacts were noted for soils, vegetation, and wildlife. There would be no effects to endangered or threatened species. No conflicts were found in the areas of resource use patterns, topography, climate, air quality, and mineral resources. Impacts to domestic livestock and socioeconomics would be minimal. There would be no effect on Cultural Resources listed or, eligible for listing in, the National Register of Historic Places.

I.A. INTRODUCTION

The Western Area Power Administration (Western) is proposing to construct, operate and maintain eight microwave communication facilities in southwestern Colorado, southeastern Utah, and northern Arizona. The approximate locations of these sites are shown in Figure 1.

This environmental assessment (EA) describes the existing environmental conditions and the impacts from construction of the eight microwave communication facilities. The EA was prepared in compliance with the National Environmental Policy Act of 1969, the Council on Environmental Quality Regulations (40 CFR 1500-1508), and the Department of Energy Guidelines (52 FR 47662, December 15, 1987).

The EA is organized into nine sections. The first section provides the summary and an overview of the entire proposal. The discussion focuses on general project information, including purpose and need, construction activities, the impact assessment process, general impacts, and cumulative impacts. The other sections address each site specifically and include assessment of potential environmental impacts, mitigation, and residual impacts. The organization was selected based on the nature of the proposal (eight separate facilities with no physical connections but which comprise a single communication system), and because the eight sites are located in seven jurisdictions. At the Federal level, the sites are under the jurisdiction of the U.S. Forest Service (USFS), U.S. Bureau of Land Management (BLM) and the Bureau of Indian Affairs (BIA). The five sites located on Native American lands are in five different chapter jurisdictions of the Navajo Tribe. Two of these five sites are on lands contested by the Hopi Tribe. Separate reports prepared for each site have been combined into one EA for the Federal review but could be separated for review by the other jurisdictions.

I.B. PURPOSE AND NEED

The purpose of this project is to upgrade Western's existing microwave system in southwestern Colorado, southeastern Utah, and Arizona to meet the minimum fade margin criteria established by the Western Systems Coordinating Council (WSCC). The WSCC, a voluntary organization of electric utilities located in the western United States, has established minimum standards for reliability of microwave communication circuits used in the control and protection of electric power systems.

Western's microwave system, designed and built in the mid-1960's, experiences fading due to long path lengths which results in loss of data and voice transmission capability. This loss jeopardizes the control and monitoring of Western's electrical power system facilities. The addition of the proposed microwave repeater sites to Western's system will increase communications reliability to an acceptable level by shortening the path lengths.

I.C. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE PROPOSED ACTION

1. Project Description

Western is proposing to construct a series of eight microwave repeater facilities, each of which would include a single self-supported lattice steel tower, ranging in height from 40 to 100 feet, (Figure 2) an equipment building, and a propane tank. The facilities would require an electrical power source and an access road. Two of the sites, Teec Nos Pos and Moenkopi, would be enclosed by an eight foot chain link fence. The remaining sites, Sand Rock, Cow Point, Mexican Hat, Lolamai Point, Preston Mesa, and Mingus Mountain, would be unfenced. The microwave communication facilities would be located in three states on lands administered by three different Federal agencies. The locations of these sites are indicated in Figure 1 and are listed in Table 1.

Figure 2
Typical Self-Supporting
Lattice Microwave
Tower

INSERT FIGURE 2 HERE

Table 1. SOUTH MICROWAVE SYSTEM, FACILITY SUMMARY

SITE NAME	COUNTY	USQS QUADRANGLE	LOCATION	ELEV (FEET)	JURISDICTION	SITE STATUS	ROADS	SITE SIZE	STRUCTURES
Sand Rock	San Miguel, CO	Joe Davis Hill	T42N, R18W, NMPM Lat 37-53-29 Lon 108-50-00	8090	BLM	Existing	775' New 12' Wide	200' x 200'	Building, 50' Tower, Tank, 868' DL w/ 20' ROW
Cow Point	Montezuma, CO	Ruin Canyon	T38N, R19W, NMPM Lat 37-35-04 Lon 108-56-34	6719	BLM	New Site	90' New 12' Wide	200' x 200'	Building, 100' Tower, 372' DL w/ 20' ROW, Tank
Teec Nos Pos	Apache, AZ	Teec Nos Pos	T40N, R9E, Unsurveyed Lat 36-53-02 Lon 109-03-58	5860	Navajo	Existing	150' New 12' Wide	11700 sq ft	Building, 50' Tower, Tank, 330' DL w/20' ROW
Mexican Hat	San Juan, UT	Mexican Hat, 15'	T42S, R19E, SLM Lat 37-09-15 Lon 109-48-47	5610	Navajo	New Site	35980' Ex, 1160' New, 12' Wide	200' x 200'	Building, 100' Tower, Tank, 8.7 ml DL w/20' ROW
Lofamal Point	Navajo, AZ	Marsh Pass	Lat 36-39-13 Lon 110-23-04	7835	Navajo	New Site	5175' New, 12' Wide	200' x 200'	Building, 60' Tower, Tank, 2.7 ml DL w/20' ROW
Preston Mesa	Coconino, AZ	Preston Mesa South	Lat 36-21-32 Lon 111-12-08	6740	Navajo	Existing	18' New 12' Wide	100' x 100'	2 Buildings, 100' Tower, Tank 28' DL
Moenkopi	Coconino, AZ	Cameron 15'	T28N, R9E, G&SRM Lat 35-49-53 Lon 111-26-10	4526	Navajo	New Site	2120' New 12' Wide	100' x 100'	2 Buildings, 40' Tower, 190' DL w/ 20' ROW, Tank
Mingus Mountain	Yavapai, AZ	Cottonwood	T15N, R2E, G&SRM Lat 34-42-04 Lon 112-07-04	7815	US Forest Service	Designated Existing	190' New 12' Wide	100' x 100'	Building, 70' Tower, Tank 150' DL

DL: Distribution Line ROW: Transmission Line Right-of-Way G&SRM: Gila and Salt River Meridian NMPM: New Mexico Meridian SLM: Salt Lake Meridian

2. System Requirements

Western conducted a feasibility and design study to develop the proposed microwave system. Selection of technically feasible sites is based on requirements for adjacent sites to be located in direct line of sight to ensure that no obstructions interfere with sending and receiving signals, efficient path length design to reduce the problems with fading over long distances but to space the sites in a cost effective manner (i.e., minimum number of sites needed to effectively operate the system), proper location of the sites in relation to the transmission systems to be operated, the need to locate some sites in very limited locations so that communications with existing command centers or existing microwave sites can be effected, the distance of the sites from an electrical power source needed to operate the equipment so that the expense of constructing distribution lines can be minimized, and accessibility of the sites by overland travel so that the equipment can be maintained.

The locations of the microwave repeater sites were influenced by several factors. The choice of intermediate repeater sites is greatly influenced by the nature of the terrain between sites, since line-of-sight is required between repeater sites in order for the microwave radio system to function. Because maintenance access is very important and because of the requirement for propane fuel to run a standby generator, access by road is considered necessary so that the tank can be refilled. In addition, the availability of electrical power of suitable voltage enters into site selection. Physical characteristics of the site such as the amount of leveling required can be important. Anticipated land acquisition costs or problems frequently enter the evaluation process. The usefulness of the site in terms of required future system expansion may also be a consideration. For example, if a new substation would be added to the electrical power system in the vicinity of one of the proposed repeater sites, communications with the substation for the purposes of monitoring and controlling equipment would probably be required. Higher elevation repeater sites in a communications system would be

more likely to provide a line-of-sight path directly to the substation since they overlook more of the surrounding terrain. In this case, when selecting between a lower elevation site and a higher elevation site, both of which would be sufficient for communication between existing sites, the higher elevation site may be more useful for future system expansion. In another case, where two possible repeater sites are being considered, one of which is on the side of a mountain that faces an area of anticipated growth, and the other of which is on a side of the mountain where no growth is anticipated, selection of the site that faces the area of more probable future expansion could save considerable future costs.

The maximum distance between sites is practically limited to about 40 miles in order to maintain radio system performance that is acceptable in electrical power system monitoring and control applications. Approximate 40-mile spacing between repeater sites is also consistent with best economic utilization of the radio equipment since it minimizes the number of repeaters required. It is possible to very closely predict received signal levels for the equipment that Western proposes to install. There exists an approximate maximum distance at which the received signal is at the minimum acceptable level or below the acceptable level a very small percentage of the time; which is to say, the transmitter and receiver equipment is being used at its maximum capability. If the repeaters were spaced at this distance, the resulting system would be at its lowest cost since the smallest number of repeaters would be constructed. If the terrain were perfectly flat and if all the other factors that affect the placement of microwave repeaters (i.e., proximity to electrical power, access, acquisition costs, etc.) are equal, then repeaters would all be spaced in such a manner. In fact, terrain features and evaluation of the other factors cause the actual distances between repeaters to deviate from the ideal distance of approximately 40 miles. When the distance exceeds 40 miles, the system performance begins to deteriorate below what is required in terms of statistically determined system reliability. Excessive non-conformance to the stated maximum

distance of 40 miles between repeaters will cause the cumulative deterioration in system performance to the point where the system is unacceptable.

Design of microwave systems is not conducive to extensive analysis of alternatives due to the severe constraints on locating each site. For this reason no system alternatives were developed for the environmental review.

3. Construction Requirements - Construction of a microwave repeater site is generally completed during one construction season. The construction contractor would generally move onto the site, complete all required construction, and then leave the site, without returning at a later date to complete any significant amount of construction. The planned construction work could be completed at several of the proposed low elevation sites during the winter without delay. The exact time of the year that construction would take place at any of the proposed sites is unknown at this time but would be within any construction time frames agreed upon as a condition of land acquisition.

Access road work is completed first, followed almost immediately by excavation for building and tower foundations. Excavation and earthmoving equipment would be required. The type of equipment used may vary depending on the scope of work required at the site. At sites requiring very little access road work, all work may be accomplished with a backhoe and a tractor with rear blade. At sites requiring more extensive access road work, a dozer and scraper may be used (refer to Appendix D for anticipated equipment use at each site). When truck access is available to the site and foundation excavation is complete, concrete is then placed at the site. Concrete placement is followed by erection of the tower and delivery of the

building. A crane is required to erect the tower and to place the building on its foundation. Construction work concludes with connection of electrical service to the building and installation of the propane tank and buried gas line between the building and the propane tank. A backhoe is required to open and close the trench needed to bury the gas line.

NO ACTION

The no action alternative is to retain the present microwave system and add no repeater sites. This alternative was rejected since the diminished control and monitoring of the system due to fading would not be resolved and the reliability criteria of WSCC would not be met.

LEASED TELEPHONE LINES

This alternative would require leasing commercial telephone circuits in lieu of improving Western's microwave system. The alternative was rejected because of the higher cost of leased circuits and the lack of reliability of commercial telephone circuits when used as a part of a power system control and protection system.

I.D. ENVIRONMENTAL CONSEQUENCES

This section describes the general impacts associated with the proposed action that would be expected to occur at the eight proposed microwave sites. Site specific impacts are described further under discussions of individual sites.

METHODS

Environmental impacts were defined as a modification in the existing environment, as a result of the proposed action. Environmental impacts can be positive (beneficial), or negative (adverse); primary (a direct result of the action), or secondary (indirectly related to the presence of the proposed action); and they can be long-term or short-term.

Identifying the impacts associated with the proposed project required a two-step process. The first step was to define the proposed action, with associated components, including the design, construction, operation, and maintenance of each of the eight microwave repeaters. Other components considered included existing environmental conditions at each site, the extent to which the proposed action may affect that site, and the identification of mitigating measures. The second step involved the identification of residual impacts that would likely occur at each site. A residual impact is an impact which is expected to be present after application of mitigation. In order to determine the levels or magnitude of potential impacts to the following criteria were used:

Resource Sensitivity - This describes the probable response of a resource to the proposed action.

Resource Quality - This describes the present condition and/or value of the resource.

Resource Quantity - This is the amount of resource potentially affected compared to the total amount of the resource in the project area.

Duration of Impact - This is the period of time over which the resource would be affected. These periods are short-term (up to a few years) or long-term (life of the project and beyond).

Once the residual impacts were identified, assuming application of mitigative measures, the levels of impact are defined in the following manner:

High Impact - A high level of impact would result if the proposed action would cause a substantial change to an environmental resource.

Moderate Impact - A moderate level of impact would result if the proposed action would cause a limited change to an environmental resource.

Low Impact - A low impact would result if the proposed action would cause an insignificant or minor change to an environmental resource.

No Impact - No impact would indicate that no measurable changes would occur to an environmental resource.

Environmental data were assembled through review of secondary data sources, which included published literature, maps, and various agency contacts. Site inspections were conducted by resource specialists to verify environmental data obtained through secondary sources. Site inspections, conducted during the Summer of 1988, included all identified natural and human resource values, but were particularly sensitive to the presence and quality of soils, water, vegetation, resource use patterns (including land use, recreation, and visual resources), wildlife, endangered, threatened or sensitive species, domestic livestock, socioeconomics, and archaeology.

The agency contacts for physical resources (geology, climate, soils) included the Navajo Tribal Division of Resources, the U.S. Bureau of Indian Affairs, the U.S. Soil Conservation Service, the U.S. Bureau of Land Management, and the U.S. Forest Service. For information regarding natural resources (water, vegetation, wildlife, and endangered and threatened species) all of the above agencies were contacted, in addition to Navajo Fish and Wildlife, the U.S. Fish and Wildlife Service, the Colorado Division of Wildlife, the Utah Division of Wildlife, and the Arizona Game and Fish Department. Information concerning human resources (resource use patterns, land use, recreation, visual, socioeconomics) was gathered from the Navajo Tribal Community Development Division, the U.S. Bureau of Indian Affairs, the U.S. Bureau of Labor Statistics, the Utah Division of Parks and Recreation, and other State and local agencies. The identification of Chapter locations and socioeconomic information were

based on the 1980 Census Chapter Enumeration District (ED) maps and were provided by the Navajo Tribal Community Development Division. A complete list of agencies and individuals contacted is provided in Appendix B.

Threatened and Endangered Species: Western requested information from the U.S. Fish and Wildlife Service on the occurrence of threatened and endangered species at the proposed microwave sites. The USFWS responded (letter in Appendix B) with the following information:

1. Lolamai Point: The area is historic habitat for the endangered peregrine falcon (Falco peregrinus). Surveys for nests were recommended.
2. Moenkopi: Candidate Category 1 species, Pediocactus peeblesianus var. fickeinsenia, may be present. Surveys were recommended.
3. Cow Point: Historic habitat of the black-footed ferret (Mustela nigripes) is known from the area. Recommended surveys for prairie dog colonies. Bald Eagle (Haliaeetus leucocephalus) winter in the area. The FWS suggested that powerlines be designed to prevent accidental electrocution of raptors.

Cultural Resources: In accordance with the National Historic Preservation Act of 1966, as amended, Western considered the potential for impacting significant cultural resources. An intensive (Class III) cultural resource survey was conducted at each proposed location. Western consulted with the State Historic Preservation Officers for Colorado, Utah, and Arizona, and with officials representing the BIA, BLM, USFS, Navajo Tribe, and Hopi Tribe to evaluate recorded cultural resources and develop appropriate mitigation measures (Letter in Appendix B).

In accordance with the American Indian Religious Freedom Act, the BIA, at Western's request, contacted the Hopi, Navajo, and Zuni Tribes to request their concerns for traditional religious sites or practices^{that} could be impacted by the proposed project. Written responses were received from

the Navajo and Hopi Tribes (Letters in Appendix B). Western met with the Hopi Natural Resources Committee and the Navajo Division of Natural Resources to discuss potential religious concerns.

IMPACT SUMMARY

Impacts to environmental resources at each of the eight proposed microwave sites are summarized in Table 2. There were no moderate or high level impacts found.

There are several primary impacts associated with the proposed action that would generally be experienced, to varying degrees, at each microwave site. These include clearing and grubbing and/or blading and grading of the access roads. Clearing and grubbing is defined as the removal of shrubs and large rocks only to the extent needed to provide an obvious route for vehicular traffic. Blading and grading is defined as improvements to existing trails and roads. Construction of the electric distribution lines, the equipment building and the propane tanks will require blading and grading. The impacts associated with these activities would be long-term; that is, they would endure past the life of the facility. The level of impact of vegetation removal varies from site to site, because of climatic conditions, the amount and type of vegetation present, the length of distribution lines and access roads, and previous disturbance in the area.

Adverse impacts would result from intense activity in a relatively small area, including the use of earthmoving equipment in some sites and large trucks for hauling steel and propane tanks. Wildlife may be impacted by these construction activities. The impacts would be short-term and would not extend beyond the construction period.

The operation of construction equipment at each of the sites will result in a short-term increase in noise levels. Due to the remoteness of the sites and the brief nature of construction activities, these impacts will be insignificant.

Impacts would occur on all sites due to the presence of structures. These structures include equipment buildings, microwave towers, and the poles and conductors associated with the distribution lines. These impacts could affect visual resources since they would be an intrusion on the landscape. They could also affect biological resources, especially birds, which may be electrocuted on the distribution lines or collide with the microwave towers and/or the distribution lines. Due to design considerations, Western's proposed facilities are not expected to substantially increase the potential for electrocution. New facilities at existing sites would increase the potential obstructions to birds in flight. Through the use of self-supporting towers, as opposed to guyed towers, the potential for bird collisions would not be significantly increased.

The impacts to socioeconomics will be similar for each microwave site. Western, an agency of the Federal government, is not subject to the payment of property taxes. Although Western does pay for easements, it is not authorized to make payments in lieu of taxes. Therefore, the proposed project will have no effect on local tax bases in the project area.

Because of the small workforce required for construction, significant socioeconomic effects are not anticipated for any communities or towns near the proposed microwave facility sites. With a peak workforce per site estimated at only five to seven individuals, and a combined peak workforce for all sites at any given time of approximately 30 workers, it is not expected that noticeable long-term changes would take place to the local population, housing conditions, employment, income, or community infrastructure. Some slight economic benefits may be experienced if laborers or other workers are locally hired. Appendix D summarizes expected workforce requirements by construction phase and skill category.

Threatened and Endangered Species: In response to the requests and information from the U.S. Fish and Wildlife Service, Western conducted the recommended surveys for peregrine falcon nests near Lolamai Point; Pediocactus peeblesianus at Moenkopi; and prairie dogs at Cow Point. The distribution line at Cow Point will be designed to minimize accidental electrocution of raptors. The results of Western's surveys can be found in the Biological Assessment in Appendix E. Western concluded that the proposed project would not affect threatened and endangered species. The letter of concurrence from the U.S. Fish and Wildlife Service is in Appendix B.

Cultural Resources: The Navajo Nation Archaeology Department (NNAD) conducted cultural resource surveys of the five proposed locations on Navajo Tribal lands (Langenfield 1988). The Cow Point and Sand Rock locations were surveyed by the BLM (Arrington 1979, Arrington and Robinson 1988) and Complete Archaeological Service Associates (Fuller 1987). The Forest Service surveyed the Mingus Mountain location (McCormick 1988). A total of five archaeological sites were recorded within or adjacent to the eight proposed locations. In consultation with the SHPO's and the land managing agencies, Western determined that four of the five archaeological sites are eligible for inclusion in the National Register of Historic Places because of their potential to yield important information (36CFR60.4(d)). Additional data would be required to make a determination regarding the other site. Western has redesigned construction plans in order to avoid all five sites and has determined that the undertaking would have no effect on significant cultural resources. Copies of concurrence documents are in Appendix B.

The Hopi Tribe expressed a concern about the project possibly impacting traditional eagle feather collection areas at Preston Mesa and Lolamai Point. Western conducted a raptor survey. At Lolamai, Western found no eagle nests in the vicinity. Preston Mesa is considered unsuitable habitat for eagles. Construction and use of the

microwave facilities would require a short duration construction period and infrequent visits for maintenance. Construction and use of the facilities would not prevent eagle nesting in the vicinity of either facility.

Secondary or indirect impacts are specific to each site. They would include increased accessibility to remote areas, the potential for human settlement due to the presence of primary electric power (the distribution line), or the indirect economic benefits of construction workers entering a nearby community. Secondary impacts are discussed in detail where they are appropriate. None of these impacts are expected to be significant.

2. Mitigation measures - Appendix C of this document is a list of standard mitigation practices which Western would use when applicable on a site-by-site basis. These measures will be included in the specifications for construction.

SAND ROCK SITE AND FACILITIES

SAND ROCK SITE
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Figure SAND ROCK M

LOCATION

SR-1 MICROWAVE SITE

SITE LAYOUT

SAND ROCK SITE

The Sand Rock site is located in San Miguel County, Colorado, approximately 12 miles northeast of the town of Dove Creek (see Figure SR-1). The site is in the NE1/4, Section 22, T42N, R18W, overlooking the Dolores River Canyon. There is an existing microwave facility approximately 650 feet southwest of the Sand Rock site. The site will be a 200x200 foot square (0.92 acres) with the 50-foot, self-supporting tower located in the center of the square. The facility would include a propane tank and an equipment building, both of which will require concrete foundations. Power will be provided by extending an Empire Electric Association distribution line for approximately 868 feet on single-pole, wood structures in a 20-foot-wide right-of-way. Access to the site will require extending the road from the existing facility for approximately 775 feet in a 30-foot wide right-of-way.

II.A. EXISTING ENVIRONMENT

1. Topography

The site is fairly level and situated at an elevation of 8100 feet above sea level. It is approximately one mile west of and 2200 feet above the Dolores River.

2. Climate

The region receives about 12-14 inches of precipitation annually, most of which occurs in spring and autumn. Summers are generally mild to hot, depending on elevation, while winters are cool to cold (Turner 1982).

3. Air Quality

Air quality is generally good. Most potential polluting sources are well to the south or east.

4. Geology

The Dolores River Canyon, just east of the site, exposes Dakota Sandstone and the underlying Triassic and Jurassic sedimentary rocks. These rocks are called "red beds" (Chronic 1980).

5. Soils

Soils maps have not been published, according to representatives of the U.S. Soil Conservation Office (Dean Stoudt, Norwood, Colorado, personal communication, 1988). However, nearby soils have been mapped, and based on vegetation, the soils present are probably Nortez-Fivepine loams. These are moderately deep and well drained loamy soils that are suitable for irrigation, although they are primarily used for rangelands.

6. Water

There is no open water within 1 mile of the site. The site drains into the Dolores River to the east. It overlies the Entrada Formation and Navajo Sandstone on which there could be aquifers perched. (Mark Hollis, Bureau of Land Management, Durango, Colorado, personal communication, 1988).

7. Vegetation

Ground cover is nearly 100 percent. Trees present include ponderosa pine (Pinus ponderosa), pinyon pine (Pinus edulis) and juniper (Juniperus scopulorum). All three of these species are widely scattered. Important shrub species noted in the vicinity include Juneberry (Amelanchier utahensis), Gambel's oak (Quercus gambelii), bitterbrush (Purshia tridentata) and creeping barberry (Berberis repens). Herbaceous species include blue flax (Linum sp.), buckwheat (Eriogonum sp.), Indian paintbrush (Castilleja sp.), Phlox sp., larkspur (Delphinium scaposum), mules-ears (Wyethia amplexicaulis), lupine (Lupinus sp.), and Allium sp. Several grasses were noted, including Bromus sp., Poa sp. and June grass (Koeleria cristata).

8. Resource Use Patterns

- a. Land Use - Forest resources appeared to be marginal for even firewood gathering, although the scrub oak might provide some harvestable firewood. As indicated earlier, there is an existing microwave facility to the southwest.
- b. Recreation - The BLM (Mark Hollis, personal communication, 1988) has indicated that the site is used for both hunting and grazing.

9. Wildlife

Wildlife cover is good. Several snags (standing dead trees) are present. Snags may provide cover for some species of birds. A number of shrubby thickets are available for escape and resting cover and the vegetation provides good feeding cover. Mule deer (Odocoileus hemionus) tracks were seen. Several bird species were noted, including mourning dove (Zenaida macroura), American robin (Turdus migratorius), rufous-sided towhee (Pipilo erythrophthalmus) and Virginia's warbler (Vermivora virginiae).

10. Domestic Livestock

There was evidence of cattle grazing approximately 1/2 mile to the west. The number of cattle observed was less than 50. The BLM has indicated the Sand Rock site is used for summer grazing of cattle and horses.

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service has reported no endangered, threatened, or sensitive species occurring in the vicinity. (See letter Appendix B). The Colorado Division of Wildlife also reported no species of concern. No indications of any threatened, endangered, or sensitive species were noted during the on-site inspection.

12. Socioeconomics

- a. Population - The proposed site is located within San Miguel County, Colorado. The 1986 population for San Miguel County was 3,200, or about the same as the 1980 estimate of 3,192. By comparison, between 1980 and 1986, the population for the State of Colorado increased by over 13 percent.
- b. Employment - The most current employment statistics for San Miguel County are for mid-1988. According to the Bureau of Labor Statistics, the mid-1988 unemployment rate for San Miguel County was 6.8 percent, with a total employment of 2,262 and 165 unemployed individuals. The 1988 unemployment rate for the State of Colorado is 7.7 percent.
- c. Income - Per Capita income for the County in 1986 was \$8,772, considerably below the statewide average of \$11,713. Between 1980 and 1986, the per capita income for residents of San Miguel County increased by slightly more than six percent per year. In contrast to this trend, and during the same time period, per capita income for all residents of Colorado grew by about eight percent per year.

13. Archaeology

A cultural resource survey conducted by the U.S. Bureau of Land Management recorded two archaeological sites (Arrington and Robinson 1988). A large disperse lithic scatter (5SM610) which the U.S. Forest Service previously determined eligible for inclusion in the National Register was located on the eastern edge of the project area. A rock rubble pile of undetermined significance was located in the vicinity of the proposed access route.

II.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation and maintenance of the proposed facility is not expected to have a noticeable effect on the topography, climate, geology, ground water, or socioeconomics.

1. Air Quality

During clearing and construction, dust may cause a temporary decrease in air quality. This impact would be insignificant and would not extend beyond construction. Operation and maintenance are not expected to noticeably affect air quality.

2. Soils

The potential for soil erosion during construction is relatively minor as the site, access road, and distribution line are fairly level. The topography and the density of vegetative ground cover indicate that the potential for soil erosion potential would be low and relatively short-term.

3. Water

Grubbing and hoeing of the site during construction would slightly increase the potential for soil erosion. Subsequent increases in sediment load and siltation of downstream water courses would be minor. This potential impact to surface waters may also result from grading the access road. Impacts to surface waters downstream from the site would be low level and short-term.

Other impacts to water quality may occur due to the accidental release of petroleum products (gasoline, crankcase oil, hydraulic oil, etc.) during routine operations. These operations may include refueling, changing of fluids, and other maintenance activities.

Implementation of Western's standard mitigation measures would reduce the likelihood of impacts to water quality.

4. Vegetation

Construction would require the clearing of a 40,000 square-foot area for laydown of materials and movement of construction equipment. In addition, the access road which is approximately 775 feet long and 12-feet wide, would be grubbed and hoed; 200 feet will be gravelled. The distribution line would be 868 feet long and would require a 20-foot

wide right-of-way that would be cleared only of tall woody vegetation. Herbs and forbs would be impacted by the laydown of materials and movement of equipment needed for construction. The latter species will be allowed to regrow where they do not interfere with operation of the microwave facility. Along the distribution line right-of-way, shrubs and trees would be removed and would not be allowed to regrow where they would interfere with the operation of the line or pose a hazard to human safety.

5. Resource Use Patterns

- a. Land Use - There would be no major changes in the land use patterns.
- b. Recreation - The microwave repeater facility would not be visible from any major designated recreation areas, nor would it interfere with known recreational uses of the area.

6. Wildlife

During clearing and construction activities, wildlife species would move off-site. This would be a short-term, low-level impact because these species would return to the site and its environs following construction.

The removal of snags from the site may cause a loss of habitat for some wildlife species (Scott, et al., 1977). Removal of the large woody vegetation on the distribution line right-of-way would cause minor habitat alterations; as would the construction of the access roads.

The presence of the distribution line and the microwave tower may slightly increase the potential for bird collisions. However, no obvious natural corridors which birds might use to move to and from feeding or roosting areas were noticed around the site, therefore this impact would be low level but long-term.

There is a possibility of bird electrocutions on the distribution line, but the height of vegetation around the site indicates the structures would probably not be frequently used as perches by large birds and the measures described in Section II.C-4 indicate this impact would be low level but long-term.

The presence of the existing microwave facility near Western's proposed site and the number of roads and trails in the area indicate that the secondary impact of increased accessibility would not be significant.

7. Domestic Livestock

Approximately 0.23 acres of vegetation would be permanently removed as a result of construction. The vegetation removed, less than 1 A.U.M. (the vegetation which would support one animal for one month), would not be available for use by domestic livestock.

8. Endangered and Threatened Species

There would be no impact on endangered or threatened species.

9. Archaeology

The rock rubble pile (5SM1984) is over 60 feet from the access road and will not be impacted. Western moved the location of the microwave facility 50 feet southwest and will construct a temporary fence along the northeastern edge of the construction area in order to avoid impacts to the lithic site (5SM610).

II.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion following clearing and construction, the construction contractor would revegetate the areas where soil has been exposed, as soon as practical, following the last phase of construction. Revegetation would incorporate industry standards and would use the plant species designated as acceptable by the U.S. Bureau of Land Management. These include:

Western wheatgrass	<u>Agropyron smithii</u>	10 lbs/acre
Indian rice grass	<u>Oryzopsis hymenoides</u>	4 lbs/acre
Blue grama grass	<u>Bouteloua gracilis</u>	4 lbs/acre
Antelope bitterbrush	<u>Purshia tridentata</u>	3 lbs/acre

These amounts are for broadcast application. If seeds are drilled, the amounts may be reduced by half.

2. Water

The measures described for soils impacts would minimize any impacts relating to sedimentation and siltation of water courses.

To avoid accidental contamination of surface waters, the contractor would not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Removal of large woody plant species is an unavoidable impact. By reseedling those areas where appropriate, the loss of vegetation will be minimized. Only those plants whose presence would interfere with reliable operation or safety, would be removed resulting in insignificant impacts to plant communities.

4. Wildlife

The habitat alterations resulting from clearing and construction is an unavoidable impact. The revegetation described in the Soils Section above would minimize many of the potentially adverse impacts to wildlife.

With current technology, the potential for bird collisions with the tower and the distribution line is unavoidable but the impact is not expected to be significant.

In order to reduce the potential for bird electrocutions associated with the distribution line, the line will be designed in accordance with REA Bulletin 61-10 (Revised 1979) and the Suggested Practices for

Raptor Protection on Powerlines (Olendorff, et al., 1981). By incorporating these measures, the possibility of electrocuting large birds will be minimized, resulting in no significant impacts.

5. Domestic Livestock

There will be no significant loss of grazing capacity because none of the site will be fenced.

COW POINT SITE AND FACILITIES

COW POINT SITE
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COW POINT SITE

The proposed Cow Point site is located in Montezuma County, Colorado, Approximately 12 miles south of Dove Creek, Colorado (see Figure CP-1). The site is in the NE1/4, Section 4, T38N, R19W. An oil well and storage tanks are present approximately 525 feet north of the proposed site. The site would be 200x200-foot square (0.92 acres) with a 100-foot tall, self-supporting steel-lattice tower located near the center. The facility would include a propane tank and equipment building, both of which would require concrete foundations. Power would be provided by extending an existing Empire Electric Association distribution line 3,721 feet (see Figure CP-2) on a 20-foot wide right-of-way. A new access road, about 90 feet long, would be constructed from an existing road. The access road would require a 30-foot wide right-of-way.

III.A. EXISTING ENVIRONMENT

1. Topography

The site is situated at an elevation of 6720 feet above sea level. West of the proposed site, elevation drops off 900 feet in about 1 mile to the bottom of Cross Canyon. Elevation changes are less dramatic in the other three cardinal directions. East of the proposed site are the upper reaches of Cow Canyon.

2. Climate

The region receives about 12 to 14 inches of precipitation annually with most occurring in the fall and spring. At this latitude and elevation, the summers are hot with mild to cold winters (Turner, 1982).

3. Air Quality

Air quality is generally good with occasional minor air quality problems resulting from the coal-fired power plants in the Four Corners area. Wind blown dust and particulates are also present occasionally.

Figure COW POINT M

LOCATION

re CP-1 MICROWAVE SITE

SITE LAYOUT

**FIGURE CP-2
PROPOSED DISTRIBUTION LINE ROUTING
COW POINT MICROWAVE SITE**

4. Geology

The site is underlain by Dakota Sandstone (Chronic 1980). Depth to bedrock is three to six feet. Rock outcrops are quite noticeable in the Cow Canyon and Cross Canyon drainages.

5. Soils

Soils maps for the site have not been published. However, the U.S. Soil Conservation Service in Cortez, Colorado, (Mike Rich, personal communication, 1988) indicated the site was probably in the Cahona-Pulpit complex. These soils are moderately deep to deep, very fine sandy loams and loams. They are mostly used for irrigated and non-irrigated crops and pasture.

6. Water

There is no open water within 1 mile of the proposed site. Cow Canyon contains an ephemeral stream. Water from this canyon drains into Cross Canyon, which also contains an ephemeral stream. Cross Canyon empties into the San Juan River.

The BLM (Mark Hollis, personal communication, 1988) reports that aquifers may be perched on the Entrada Formation or on the Navajo Sandstone. These are underlying the site by 720 feet and 1100 feet, respectively.

7. Vegetation

Ground cover is about 75 percent. The site has apparently been burned in the last five years. The few trees are junipers (Juniperus scopulorum). The vegetation is dominated by big sage (Artemesia tridentata) with some rabbitbush (Chrysothamnus viscidiflorus). Grasses include Indian rice grass (Oryzopsis hymenoides), a wheatgrass (Agropyron sp.), cheat brome (Bromus tectorum), and Setaria sp. Forbs identified on the site were poppymallow (Sphaeralcea sp.), lupine (Lupinus sp.), goatsbeard (Tragopogon dubious), thistles (Cirsium sp.), skyrocket (Ipomopsis aggregata) and a Penstemon sp.

8. Resource Use Patterns

- a. Land Use - There is oil production within one-quarter mile of the site. There is probably insufficient woody vegetation to provide a significant supply of firewood. The BLM reports that the site is used for livestock grazing. No evidence of grazing was noted during field studies.
- b. Recreation - There is abundant evidence of elk (Cervus canadensis). The BLM reports the site is used primarily for recreation, mostly hunting.

9. Wildlife

During June 1988 field studies, there was evidence of elk, probably wintering. Although there is little escape or resting cover for medium-sized or larger mammals, the juniper and big sage along with the forbs, would provide some feeding cover. The only bird noted was a rufous-sided towhee (Pipilo erythrophthalmus).

10. Domestic Livestock

There was no evidence that the Cow Point site is used for grazing.

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service (FWS) has reported that the site is near a known location of wintering bald eagles (Haliaeetus leucocephalus, see letter in Appendix B). The exact location of the winter roost was not given, and there was no evidence found during a June 1988 survey that such a roost occurs within 1 mile of the site. The FWS also indicated that prairie dogs (Cynomys spp.) may occur in the project area. The presence of prairie dogs is considered suitable habitat for the endangered black-footed ferret (Mustela nigripes). There were no prairie dog towns observed within 2 miles of the proposed site. The Colorado Division of Wildlife indicated there were no species of concern to the State on the site.

12. Socioeconomics

- a. Population - The proposed site is located within Montezuma County, Colorado. The 1986 population for Montezuma County was 19,300 or about 17 percent higher than the 1980 estimate of 16,510. By comparison, between 1980 and 1986, the population for the State of Colorado increased by over 13 percent.
- b. Employment - The most current employment statistics for Montezuma County are for mid-1988. According to the Bureau of Labor Statistics, the mid-1988 unemployment rate for Montezuma County was 8.4 percent, with a total employment of 8,191 and 775 unemployed individuals. The 1988 unemployment estimate for the State of Colorado is 7.7 percent.
- c. Income - Per Capita income for the County in 1986 was \$8,178, considerably below the statewide average for 1986 of \$11,713. Between 1980 and 1986, the per capita income for residents of Montezuma County increased by slightly more than six percent per year. In contrast to this trend, and during the same time period, per capita income for all residents of Colorado grew by eight percent per year.

13. Archaeology

The Bureau of Land Management conducted a cultural resource survey of the proposed facility location (Arrington 1979) and complete Archaeological Service Associates, Inc. surveyed the power line right-of-way (Fuller 1987). No prehistoric or historic cultural resources were discovered within the project area.

III.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation and maintenance of the proposed facility is not expected to have a noticeable effect on the topography, climate, geology, or ground water, or socioeconomics.

1. Air Quality

During clearing and construction, fugitive dust may cause a temporary decrease in air quality in the immediate vicinity. This impact would be insignificant and would not extend beyond construction. Operation and maintenance of the facility are not expected to noticeably affect air quality.

2. Soils

The potential for soil erosion during construction is relatively minor due to the small amount of slope at the site. The topographical changes along the distribution line right-of-way indicate the potential for soil erosion is somewhat greater than around the site, but would still be low level.

3. Water

The removal of vegetation would increase the potential for soil erosion and could subsequently increase the sediment load and siltation of downstream water courses. Any decrease in water quality would be low level and short-term.

Water quality may also be adversely affected by contamination due to accidental release of petroleum products (gasoline, crankcase oil, hydraulic fluids, etc.) during routine operations. These operations may include refueling, changing of fluids, and other maintenance activities. Western's standard mitigation measures would reduce the likelihood of impacts.

4. Vegetation

Construction would require clearing of a 40,000 square-foot area (0.92 acres) for laydown of materials and movement of construction equipment. The 90-foot long, 12-foot wide access road would be cleared and grubbed (0.02 acres). The tall, woody vegetation along the 3,721-foot long, 20-foot wide distribution line right-of-way would

be removed. The woody vegetation would not be allowed to regrow for the life of the facility. Additionally, the herbs and forbs would be impacted by the laydown of materials and the movement of equipment needed for construction. The impacts to vegetation would be long-term, but of low level.

5. Resource Use Patterns

There would be no major changes in the resource use patterns in the vicinity as a result of the construction and operation of the microwave facility.

The facility would not be visible from any major designated recreation areas. However, it would be visible from the Lowry Pueblo Ruins, which is about one and one-half miles east of Western's proposed site.

6. Wildlife

During clearing and construction activities, wildlife species would disperse. This would be a short-term impact, as most species would return following construction.

The use of the site by elk, probably for wintering, is not expected to change as a result of the proposed action. The presence of the oil well just to the north has had no apparent effect on the use of the site by elk.

The presence of the distribution line and the microwave tower may slightly increase the potential for bird collisions. Although no obvious natural corridors which birds might use to move to and from feeding or roosting areas are crossed by the distribution line, it does cross a small side-drain of Cow Canyon. The impact of bird collisions with the facilities would be low level and would not be significant.

There is a possibility of raptor electrocutions on the distribution line. However, it is unlikely that large numbers of raptors would perch on the poles because of the vegetation present in and around the site. This would be especially true after the fire-scarred area has regrown. Additionally, the mitigation measures described in Section III.C.4 would minimize the potential for electrocution.

The presence of the oil tanks, the existing dirt road, and other evidence of human activity indicate that the secondary impact of increased accessibility would not be significant.

7. Domestic Livestock

Approximately 0.05 acres of vegetation would be permanently removed as a result of construction. The vegetation removed, less than 1 A.U.M. (Animal Unit Month), would not be available for use by domestic livestock.

8. Endangered and Threatened Species

An aerial survey in the vicinity of the site during June, 1988, revealed no areas that would provide suitable habitat for wintering bald eagles.

The aerial survey failed to locate any prairie dog towns within two miles of the proposed facility. Therefore, no impact to black-footed ferrets is expected as a result of construction and operation of the proposed facility.

See Appendix E for further discussion of endangered and threatened species.

9. Archaeology

This facility will not impact cultural resources. No traditional religious concerns were identified.

III.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion following clearing and construction, the construction contractor would revegetate the areas where soil has been exposed, as soon as practical, following the last phase of the construction activities. Revegetation would incorporate industry standards and would use the plant species designated as acceptable by the U.S. Bureau of Land Management. These include the following:

Western wheatgrass	<u>Agropyron smithii</u>	10 lbs/acre
Indian ricegrass	<u>Oryzopsis hymenoides</u>	4 lbs/acre
Blue grama grass	<u>Bouteloua gracilis</u>	4 lbs/acre
Antelope bitterbrush	<u>Purshia tridentata</u>	3 lbs/acre

The amounts are for broadcast application. If seeds are drilled, the amounts may be cut in half.

2. Water

The measures described above for mitigating soils impacts would minimize impacts from sedimentation and siltation of water courses.

To avoid accidental contamination of surface waters, the contractor would not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Removal of large woody plant species is an unavoidable impact. By reseeding those areas where appropriate, as described in the Soils Section, the loss of vegetation would be minimized. Only those plants that would interfere with reliable operation or safety, would be removed resulting in no significant impacts to plant communities.

4. Wildlife

The habitat alterations resulting from clearing and construction is an unavoidable impact. The revegetation, described above, would minimize many of the adverse impacts to wildlife.

With current technology, the potential for bird collisions with the tower and distribution line is unavoidable. However, this impact is not expected to be significant.

In order to reduce the potential for bird electrocutions associated with the distribution line, the line would be designed in accordance with REA Bulletin 61-10 (Revised 1979) and the Suggested Practices for Raptor Protection on Powerlines (Olendorff, et al., 1981). By incorporating these measures, the possibility of electrocuting large birds would be minimized.

5. Domestic Livestock

There will be no significant loss of grazing capacity because none of the site will be fenced.

TEEC NOS POS SITE AND FACILITIES

TEEC NOS POS SITE
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TEEC NOS POS SITE

The proposed Teec Nos Pos site is located in Apache County, Arizona. It is in the Teec Nos Pos Chapter of the Navajo Nation and is located about 7 miles southwest of Four Corners and approximately 2-1/2 miles east-southeast of Teec Nos Pos Boarding School. It is about 1/2 mile west of Navajo Highway 1 (see Figure TNP-1). The Teec Nos Pos facility would be adjacent to an existing Navajo Tribal Utility Association (NTUA) microwave facility. The site would be a pentagonal shape, surrounded by chain link fence. A 50-foot, self-supporting tower would be placed about 50 feet from the southwest corner. An equipment building and propane tank would require concrete foundations. Access would be by an existing access road and construction of a 12-foot wide 150-foot long access road extension that would run along the south side of the NTUA facility. Power would be provided by extending the existing NTUA distribution line on a 20-foot wide right-of-way for approximately 330 feet.

IV.A. EXISTING ENVIRONMENT

1. Topography

The site is situated on a small knoll at an elevation of 5860 feet above sea level. The ground drops off at about a 10 percent slope to the north, to the south and to the west with much shallower slopes to the east.

2. Climate

The region receives less than 12 inches of precipitation annually, most of it falling in autumn. Summers are generally hot with cool to mild winters (Brown 1982).

3. Air Quality

Air quality is generally good although some haze from the power plants and industrial activities to the north and east is visible. Wind blown dust and other particulates are occasionally present.

Figure TEEC NOS POS

LOCATION

e TNP-1 MICROWAVE SITE

SITE LAYOUT

NAVAJO INDIAN RESERVATION

4. Geology

The site is on a remnant fan terrace, which is probably derived from the Carrizo Mountains, which begin to rise about 2 miles west of the site. This terrace consists of gravel, ranging from 4 to 10 feet in thickness. The gravel is underlain by Mancos shale. The site is just north of outcroppings of Dakota Sandstone which contains brown carbonaceous siltstone and lenses of coal.

5. Soils

Although the soils have not been mapped, they are described as skeletal soils with more than 35 percent rock fragments (Joe Chlaretti, U.S. Soil Conservation Service, Shiprock, NM, personal communication, 1988).

6. Water

There is no open water within one mile of the site. Runoff drains into the San Juan River, which empties into the Colorado River. There have been few wells drilled in the area and ground water presence is not well defined. Springs in the nearby Carrizo Mountains provide dependable water (Cooley, et al., 1969).

7. Vegetation

Ground cover is nearly 100 percent. There are no trees. Although junipers (Juniperus scopulorum) are present, they are shrubby. Other shrubs noted include rabbitbush (Chrysothamnus viscidiflorus) and prickly pear (Opuntia sp.) and a single clump of Coryphantha vivipara. Ground cover is predominantly grasses including wheatgrass (Agropyron sp.), needlegrass (Stipa sp.), wheatgrass brome (Bromus tectorum) and a Poa species.

8. Resource Use Patterns

- a. Land Use - There are two grazing permits issued for the site.
The presence of rock cairns close to the site indicate some human

use. These will be discussed further in the Cultural Resource Section of this report.

There is insufficient woody vegetation to make firewood gathering a worthwhile venture.

There is an existing microwave facility adjacent to Western's proposed site.

- b. Recreation - The Teec Nos Pos site is in Navajo Hunt Unit 1. This unit designation indicates the area has suitable big game populations, primarily deer, to provide a huntable resource. In 1987, there were 200 permits issued to hunt deer in Unit 1, and there will be 225 permits issued in 1988. (John Nystedt, Navajo Fish and Wildlife, Window Rock, AZ, personal communication, 1988.)

9. Wildlife

There is little cover for wildlife. There was no sign of big game use during the August 1988 field studies. The birds identified include white-throated swift (Aeronautes saxatalis), black-throated sparrow (Amphispiza bilineata) and common raven (Corvus corax). No other wildlife species were noted.

10. Domestic Livestock

There is evidence of horses utilizing the site. Permits for 157 sheep units have been issued for the area. (Randy Cornett, Bureau of Indian Affairs, Shiprock NM personal communication, 1988).

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service and the Arizona Department of Game and Fish have reported no endangered, threatened, or sensitive species occurring in the vicinity (see letters in Appendix B). The Navajo Fish and Wildlife Department (John Nystedt, personal communication,

1988) reports the site to be within ten kilometers (six miles) of marginal habitat for the endangered peregrine falcon (Falco peregrinus) (see letter in Appendix B). There was no suitable habitat for nesting peregrines within one mile of the proposed site. They also suggested a survey for Mesa-Verde cactus (Sclerocactus mesa-verde) should be performed if suitable soil conditions exist on the site. A survey for the cactus by Ms. Donna House (botanist, consultant) found no evidence of suitable habitat.

12. Socioeconomics

- a. Population - The proposed site is located within the Teec Nos Pos Chapter and the Shiprock Agency. The 1988 population of the Teec Nos Pos Chapter is estimated to be 1,560, which is about 20 percent higher than the 1980 estimate of 1,300 individuals. This represents an average population growth rate when compared to the entire Navajo Nation between 1970 and 1980. Approximately 95 percent of the 1988 population in the Teec Nos Pos Chapter is Indian (Faisch, Navajo Community Development, Window Rock, AZ, personal communication, 1988).
- b. Employment - The most current employment statistics for the Shiprock Agency is for 1986. In that year, there were 14,131 employed and 6,454 unemployed persons. Of the unemployed workers, it is estimated that 1,614 continue to seek employment. This is equivalent to an unemployment rate of about 10 percent (this figure would be slightly over 30 percent if all unemployed workers were counted, including those that are no longer seeking employment).
- c. Income - Income information is presented for the entire Navajo Nation. In 1979, the estimated per capita income was \$2,414 per year and the median family income was \$9,079 per year. The 1979 family income was \$8,342 per year (Faisch, Navajo Department of

Community Development personal communication, 1988). By comparison, the 1979 per capita income for the State of Arizona was \$7,042 (U.S. Department of Commerce, 1988).

13. Archaeology

A cultural resource survey conducted by the Navajo Nation Archaeology Department recorded two cairn sites (AZ-I-8-29 and AZ-I-8-30) on the western edge of the proposed microwave facility location (Langenfield 1988). The cairns (rock piles) are thought to be Navajo monuments, but are of unknown age and usage. Both sites were considered potentially eligible for inclusion in the National Register for informational value. Such monuments can have secular or religious significance although neither was identified for these sites.

IV.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation, and maintenance of the proposed facility is not expected to have a noticeable effect on the topography, climate, geology, ground water, or socioeconomics.

1. Air Quality

During clearing and construction, fugitive dust may cause a temporary decrease in air quality in the immediate vicinity. This impact would be insignificant and would not extend beyond construction. Operation and maintenance of the facility are not expected to noticeably affect air quality.

2. Soils

There would be a high potential for soil erosion during the upgrading of the existing access road. This is due to the steepness of the existing road. The construction is not expected to cause erosion, due to the absence of a steep slope.

3. Water

The potential for soil erosion, would increase the potential for siltation and could increase sedimentation in surface waters, due to runoff. This potential for increase in sedimentation and silt load of downstream watercourses may also occur where bare soil is exposed as a result of clearing.

Water quality could be adversely affected by contamination due to accidental release of petroleum products (gasoline, crankcase oil, hydraulic fluids, etc.) during routine operations. These operations may include refueling, changing of fluids, and other maintenance activities. Western's standard mitigation measures would reduce the likelihood of impacts to water quality.

4. Vegetation

Construction would require the clearing of 11,670 square feet (0.31 acres) for laydown of materials and movement of construction equipment. In addition, the 150-foot long, 12-foot wide access road would be cleared and grubbed. Tall, woody vegetation along the 330-foot long, 20-foot wide distribution line right-of-way would be removed to avoid interference with the operation of the facility and to prevent hazards to human safety.

Shrubs and trees would be cleared if they would interfere with operation of the facility. There are less than 20 junipers that are involved. The woody vegetation would not be allowed to regrow for the life of the facility. The herbs and forbs would be impacted by the laydown of materials and the movement of construction equipment. The impacts to vegetation will be long-term, but of low level.

5. Resource Use Patterns

There would be no major changes in the resource use patterns.

The facility would not be visible from any major designated recreation areas. It would be visible from Navajo Highway 1 for a distance of about two miles. This impact would be low level because the existing facility has already impacted the view.

6. Wildlife

During clearing and construction, wildlife species would disperse. This would be a short-term impact, as most species would return to the area following construction.

The presence of the distribution line and the microwave tower may slightly increase the potential for bird collisions. However, no obvious flyways between roosting and feeding locations were noted in the vicinity. The impact of bird collisions with the microwave facilities would be very low level.

There is a possibility of bird electrocutions on the distribution line. However, the short length of new line would not substantially increase hunting perches and the line would be designed to minimize potential problems. Therefore, the potential for electrocutions would not increase.

The presence of the existing facility and the nearness to Navajo Highway 1 indicate that the secondary impact of increased human accessibility would not be significant.

7. Domestic Livestock

The entire 11,670 square feet of the site would be fenced off. This would prevent use by domestic livestock, resulting in a loss of less than one sheep unit.

8. Endangered and Threatened Species

There was no evidence of endangered or threatened species. The site was reviewed by Ms. Donna House (botanist, consultant) for the

presence of the Federally threatened Mesa Verde cactus. There was no evidence of the cactus, or its habitat.

9. Archaeology

Site AZ-I-8-30 is outside the proposed fenced boundary of the microwave facility. Site AZ-I-8-29 was located on the southwest corner of the boundary. Western moved the alignment of the western boundary thus avoiding AZ-I-8-29 by over 20 feet. Relocation of the fence line will avoid impacts to either site. No impacts to religious values were identified.

IV.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion following clearing and construction, the construction contractor would revegetate the areas where soil has been exposed, as soon as practical, following the last phase of construction. Revegetation would incorporate industry standards and would use plant species designated as acceptable by the Navajo Division of Resources.

2. Water

The measures described for mitigating soils impacts would minimize any impacts relating to sedimentation and siltation of water courses.

To avoid accidental contamination of surface waters, the contractor would not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Removal of large woody plant species is an unavoidable impact. By reseedling as described in the Soils Section, the loss of vegetation would be minimized. Only those plants that would interfere with reliable operation or safety, would be removed, resulting in insignificant impacts to plant communities.

4. Resource Use Patterns

The rock cairns at the southwest corner of the site would be avoided by shortening the south boundary by as much as 75 feet. This would allow use of the area without interfering with operation of the facility.

5. Wildlife

The habitat alterations resulting from clearing and construction is an unavoidable impact. The revegetation, described above, would minimize any of the adverse impacts to wildlife.

With current technology, the potential for bird collisions with the tower and distribution line is unavoidable, but the impact would be insignificant.

In order to reduce the potential for bird electrocutions associated with the distribution line, the line would be designed in accordance with REA Bulletin 61-10 (Revised 1979) and the Suggested Practices for Raptor Protection on Powerlines (Olendorff et al 1981). By incorporating these measures, the possibility of electrocuting large birds would be minimized.

MEXICAN HAT SITE AND FACILITIES

MEXICAN HAT SITE
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MEXICAN HAT SITE

The proposed Mexican Hat site is in San Juan County, Utah, approximately three miles east of the town of Mexican Hat and is in the northern portion of the Dennehotso Chapter of the Navajo Nation. The site is positioned on a point of land overlooking the San Juan river (see Figure MH-1). The site would be a 200 foot square with a 100-foot tall, self-supporting steel-lattice tower. The facility would include a propane tank and an equipment building, both of which require concrete foundations. The Navajo Tribal Utilities Association will provide power with an 8.7 mile long distribution line in a 20-foot wide right-of-way. Access will require grading approximately 6.6 miles of unimproved, native-surfaced roadway, performing rock and common excavation for approximately 930 feet, and clearing and grubbing a roadway for 1160 feet.

V.A. EXISTING ENVIRONMENT

1. Topography

The site lies on a cuesta at an elevation of 5610 feet. It is situated above and approximately 6600 feet (at the nearest point) from the San Juan river. From the site the ground slopes steeply to the west, dropping 1200 feet in less than a mile. The terrain is fairly level to the north and slopes gently to the south and east.

2. Climate

The region receives around eight inches of precipitation annually. Summers are hot and dry and winters are cool to cold, depending on elevation. Most precipitation occurs in the spring and autumn (Bureau of Indian Affairs, 1974).

Figure MEXICAN HAT

LOCATION

Site MH-1 MICROWAVE SITE

SITE LAYOUT

3. Air Quality

Air quality is generally good with emissions from the two coal-fired power plants in the Four Corners region occasionally visible.

4. Geology

The site lies near the southern end of Raplee Ridge which was formed as a part of the Raplee anticline (Cooley, et al., 1969). It lies in the Hermosa Formation, which consists of alternating beds of various shades of limestone, limy shale, and gray or brown sandstone; and is surrounded by the Rico Formation, which consists of reddish and orange siltstones, light-gray sandstone, and gray limestone.

5. Soils

The Raplee Ridge soils have been mapped and are in the Lithic-Torriorthants Rock outcrop, limestone complex (U.S. Soil Conservation Service 1975). These soils are very shallow to shallow with a surface layer of reddish-brown loam. The soils are derived from limestone and the rock outcrops are limestone.

6. Water

Runoff from the site drains into Wash Creek or directly into the San Juan River, which empties into the Colorado River. Slopes of the surrounding hills are deeply incised by erosion. There is no open water within one mile of the proposed site. Few wells have been dug in the area and the occurrence of ground water is not well defined (Cooley, et al., 1969).

7. Vegetation

There are no trees. Ground cover is approximately 25 percent. Shrubs are all low growing, less than 18 inches tall. The shrub species noted include blackbrush (Coleogyne ramosissima), Mormon tea (Ephedra torreyana), greasewood (Sarcobatis vermiculatus), several saltbushes,

including Atriplex confertifolia, A. gardneri and A. nutalli, and rabbitbush (Chrysothamnus Greenei). Herbaceous vegetation is sparse with a few grasses dominating (Bromus tectorum, Oryzopsis hymenoides, and Sitanion hystrix).

8. Resource Use Patterns

- a. Land Use - There was no evidence of any human use of the site other than the jeep trail which runs up to within approximately 1000 feet of the proposed location. There is one grazing permit which encompasses the site (Robert E. Begay, BIA, Tuba City, AZ personal communication 1988). The absence of woody vegetation on the site precludes the use of the site for firewood harvest.
- b. Recreation - Recreational use in the region includes Goosenecks State Park, operated by the Utah Division of Parks and Recreation, the nearest point of which is approximately 6-1/2 miles west of the Mexican Hat site; and the Muley Point lookout which is on Cedar Mesa in the Glen Canyon Recreation area, about 11-1/2 miles west. The San Juan River is used for rafting, canoeing, kayaking, and other types of water-related activities.

9. Wildlife

Very little wildlife cover is available on the proposed site or the immediate surroundings. Several small mammal burrows were found and presumed to be those of Dipodomys or Peromyscus species. Birds observed include the mourning dove (Zenaida macroura) and the common raven (Corvus corax). A leopard lizard (Crotaphytus wislizeni) was also noted. The Navajo Fish and Wildlife Department and the Utah Division of Wildlife have indicated that the site is used by desert bighorn (Ovis canadensis).

The population size and seasonality of use has not been determined by either agency.

10. Domestic Livestock

There was abundant evidence in the area of frequent use by horses. Whether these were feral or domestic horses was not determined. The grazing permit allows approximately 50 sheep.

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service has reported no endangered, threatened or sensitive species occurring in the area (see letter in Appendix B). The Navajo Fish and Wildlife regard the site as marginal habitat for the peregrine falcon (Falco peregrinus, see letter in Appendix B). The Utah Division of Wildlife has reported a new (1988 nesting season) peregrine aerie (nest site) near the point where the Raplee Ridge and the San Juan River intersect, approximately 2 miles from the proposed site (see letter in Appendix B). They also report the San Juan river as being wintering habitat for the endangered bald eagle (Haliaeetus leucocephalus).

12. Socioeconomics

Population - The 1988 population of the Dennehotso Chapter is 2,033, which is about 25 percent higher than the 1980 estimate of 1,626 individuals. This represents a moderately lower population growth rate than for the entire Navajo Nation between 1970 and 1980. Ninety-eight percent of the 1988 population in the Dennehotso Chapter is Indian (Faisch, Navajo Community Development, Window Rock, AZ, personal communication, 1988).

- a. Employment - The most current employment statistics for the Tuba City Agency are for 1986. In the Tuba City Agency that year, there were 10,437 employed and 6,959 unemployed persons. Of the unemployed workers, it is estimated that 4,523 continue to seek employment. This is equivalent to an unemployment rate of about 30 percent (this figure would be over 40 percent if all unemployed workers were counted, including those that are no longer seeking employment).

- b. Income - Income information is presented for the entire Navajo Nation. It is not available for individual Agencies or Chapters. In 1979, the estimated per capita income was \$2,414 per year and the median family income was \$9,079 per year. The 1979 family income was \$8,342 per year (Faisch, Navajo Department of Community Development personal communication, 1988). By comparison, the 1979 per capita income for the State of Utah was \$6,305 (U.S. Department of Commerce, 1988).

13. Archaeology

The Navajo Nation Archaeology Department conducted a cultural resource survey of the project area (Langenfield 1988). No cultural resources were located. No religious values were identified in the vicinity.

V.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation, and maintenance of the proposed facility is not expected to have a noticeable effect on the topography, climate, geology, ground water, or socioeconomics.

1. Air Quality

During clearing and **construction**, fugitive dust may cause a temporary decrease in air **quality in the immediate** vicinity. This impact would be insignificant **and would not extend beyond the construction phase**. Operation and **maintenance of the facility** are not expected to noticeably affect air quality.

2. Soils

There is a moderate potential for soil erosion during construction due to the steepness of the terrain. Improvement of the existing road would also create the potential for short-term erosion. Five water crossings would be installed along the existing road to reduce the potential for washouts.

3. Water

The removal of vegetation would increase the potential for soil erosion and could subsequently increase the sediment load and siltation of downstream water courses. This potential for impact to surface water quality may also result from the movement of equipment along the distribution line right-of-way. Impacts resulting from the decrease in water quality would be low level and short-term.

Water quality could also be adversely affected by contamination due to accidental release of petroleum products (gasoline, crankcase oil, hydraulic fluids, etc.) during routine operations. These operations may include refueling, changing fluids, and other maintenance activities. Implementation of Western's standard mitigation measures will reduce impacts to water quality.

4. Vegetation

There is no large woody vegetation on the site or along the access roads or the distribution line. All of the shrubs within the 200-foot square and along the access road would be cleared so they would not interfere with operation of the facility or be a hazard to human safety. Approximately 2090 feet (0.58 acres) of new access road would be cleared and grubbed. The herbs and forbs would be impacted by the laydown of materials and the movement of construction equipment. The impacts to vegetation would be long-term, but of low level.

5. Resource Use Patterns

- a. Land Use - There would be no major changes in the Land Use.
- b. Recreation - The microwave tower may be visible from Goosenecks State Park which is 6-1/2 miles west of the site (Olsen, Utah Division of Parks and Recreation, Blanding, UT, personal communication, 1988). This would be a low level, long-term impact. The tower, which sets back about 40-feet from the edge of the escarpment, may be visible from the San Juan River but

would not have a significant impact to visual resources. The tower would not be visible from Muley Point. A straight line plot shows that Cedar Point escarpment would intercept the viewer's line of sight from Muley Point, making the Mexican Hat site not visible.

6. Wildlife

There is little evidence of wildlife use of the site. However, if, as reported, desert bighorn sheep are using the area, they would abandon the site and the immediate surroundings during construction. By avoiding construction activity during the lambing period, April 1 to May 31, these impacts would be low level and short-term (Dalton, Utah Division of Wildlife, Price UT., personal communication). According to Kathleen McCoy (Navajo Fish and Wildlife, personal communication, 1988) the sheep don't normally inhabit the microwave site during the critical summer period, June 1 to August 30. Horejsi (1976) has indicated that some human activities will disturb bighorn sheep. Most important among these were helicopter flyovers and hovering in the immediate area. Graham (1980) reported that in a California study, human activity of less than 500 man-days over a summer did not cause desert bighorn sheep to abandon his study area. However, he indicated that when human activity increased to 500 to 1000 man-days use per summer, desert bighorn stopped using his study area permanently. The presence of the microwave tower, the access road or the distribution line should not affect site utilization by desert bighorn. Horejsi (1976) speculated that the presence of humans in the visible range of bighorn sheep would increase stress, reduce feeding, and could adversely affect reproductive habits. In this regard, improvements to the existing access road could secondarily impact the bighorns by providing better access to an area which has been relatively inaccessible in the past. If this were to occur, the sheep could either abandon use of the area, or undergo a decrease in reproductive

rates which would ultimately reduce the reproductive population in the region. However, mitigative measures agreed to by both Western and the Navajo Fish and Wildlife (Section V.C.5) specific to the use of the road, will be imposed which will result in no significant impacts to desert bighorn sheep.

Although there were no obvious corridors that birds might use to fly from feeding and roosting areas near the site, the presence of the distribution line and the microwave tower may slightly increase the potential for bird collisions, but the impacts would be insignificant. The impact of bird collisions with any of the microwave facilities will be low level but long-term.

There is a slight possibility of bird electrocutions on the distribution line. Because the poles would be the tallest point in the habitat the line crosses, they would make excellent hunting perches for raptors. Potential impacts from electrocution would be minimized by line design.

The remoteness of the site would indicate that secondary impacts resulting from increased human accessibility to the area could create an adverse effect on some wildlife species. By incorporating the mitigation measures described in Section V.C.5, these secondary impacts would be insignificant.

7. Domestic Livestock

Approximately 0.6 acres of vegetation would be permanently removed as a result of construction. This represents less than one sheep unit that would not be available for domestic livestock grazing.

8. Endangered and Threatened Species

The site is over two miles from the reported peregrine falcon aerie. This exceeds the recommended distance for avoiding disruption of nesting falcons (Benton, U.S. Fish and Wildlife Service, Salt Lake City, UT, personal communication, 1988).

The site is over 1 mile from the San Juan River and any potential communal bald eagle roosts there. That distance exceeds the recommendation of Stahlmaster and Newman (1978) for avoiding disruption of wintering eagles. Therefore, it is not anticipated that construction, operation, or maintenance of this microwave facility would noticeably affect any endangered or threatened species. Additional information on endangered and threatened species can be found in Appendix E.

9. Archaeology

No cultural resources or traditional religious values will be impacted by this facility.

V.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion following clearing and construction, the construction contractor will revegetate the areas where soil has been exposed, as soon as practical, following the last phase of construction. Revegetation would incorporate industry standards and would use the plant species designated as acceptable by the Navajo Division of Resources.

2. Water

The measures described above for mitigating soils impacts would minimize any impacts relating to sedimentation and siltation of water courses.

To avoid contamination of surface waters, the contractor will not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Removal of woody plant species is an unavoidable impact. By reseeding those areas where appropriate, as described in the Soils Section, the loss of vegetation would be minimized. Removing only those plants that would interfere with reliable operation or safety, would limit impacts to plant communities.

4. Resource Use Patterns

There would be no significant impacts to visual resources. Lattice steel structures would blend with environment when viewed from distances at which most uses would take place.

5. Wildlife

Construction activities at the site, and helicopter visits to it, will be limited to the period of June 15 to October 15, except for emergencies, to avoid impacting desert bighorn sheep during the seasons when disruption would be most critical. Other measures for minimizing impacts to desert bighorn sheep would be coordinated, by Western and the Navajo Fish and Wildlife. When routine or emergency maintenance activities do occur, those activities would be accomplished by the minimum number of people needed to do the job safely.

To minimize secondary impacts, the access road would be made impassable at the base of the escarpment and at the existing crossing of the unnamed tributary to Gypsum Creek, as soon as practical after construction. The method used for making the road unusable would be agreed upon by the Navajo Fish and Wildlife Department and Western.

With current technology, the potential for bird collisions with the tower and distribution line is, unavoidable but would be insignificant.

In order to reduce the potential for bird electrocutions associated with the distribution line, the line would be designed in accordance with REA Bulletin 61-10 (Revised 1979) and the Suggested Practices for Raptor Protection on Powerlines (Olendorff et al 1981). By incorporating these measures, the possibility of electrocuting large birds would be minimized, and the impacts would not be significant.

6. Domestic Livestock

Loss of grazing capacity would be minimal.

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LOLAMAI POINT SITE AND FACILITIES

LOLAMAI POINT SITE
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Fig 1 LOLAMAI POINT

LOCATION

re LP-1 MICROWAVE SITE

SITE LAYOUT

LOLAMAI POINT SITE

The proposed Lolamai Point site is located in Navajo County, Arizona, approximately 7 miles southwest of Kayenta, and 5 miles east-northeast of the Tsegi Canyon trading post in the Kayenta Chapter of the Navajo Nation (see Figure LP-1). There is no legal description available for this site. The proposed site would be a 200-foot square (0.92 acres) with the 60-foot, self-supporting lattice tower located near the center. The facility would include a propane tank and equipment building, both of which would require concrete foundations. Power would be provided by extending an existing Navajo Tribal Utilities Association (NTUA) distribution line approximately 2.7 miles on a 20-foot wide right-of-way from an existing microwave facility, located northwest of the proposed site. Access would require some upgrading of an existing road and clearing and grubbing 12 feet of new road in a 30-foot wide right-of-way, for approximately 5,175 feet.

VI.A. EXISTING ENVIRONMENT

1. Topography

The site sets on top of a north-facing bluff of Black Mesa, at an elevation of 7,830 feet above sea level. North of the site, the elevation drops over 1600 feet within 1 mile. There is less than 100 feet of change in 1 mile in the other three cardinal directions.

2. Climate

The site overlooks an area that receives less than 12 inches of precipitation annually. The presence of ponderosa pine (Pinus ponderosa) and other trees indicate there is more precipitation falling on Black Mesa. Summers are hot and winters are cold to mild. Most of the precipitation falls in winter and summer (Brown 1982).

3. Air Quality

Air quality is generally good. Wind blown dust and other particulates are occasionally present. This is particularly true due to the proximity of the Peabody coal surface-mine, approximately 5 miles to the south.

4. Geology

Black Mesa is part of the Mesa-Verde group which is a coal-bearing formation. The site is on Yale Point sandstone, a tan and brown sandstone (Cooley, et al., 1969) and is surrounded by the Wepo Formation, which consists of alternating beds of gray siltstone, coal, and yellowish-gray sandstone.

5. Soils

Soils on Black Mesa have not been mapped. Based on the vegetation on the site and extrapolation from nearby mapped areas, the soils are probably Travessilla-Rock Outcrop complex (Deb Prevost, U.S. Soil Conservation Service, Flagstaff, AZ., personal communication 1988). The soils in this complex are very fine, sandy loams.

6. Water

There is no open water within 1 mile of the site. Runoff from the site goes south and drains into the Little Colorado River. Numerous ephemeral streams have incised ravines on Black Mesa.

The site lies in the Black Mesa Hydrologic Basin (Cooley et al 1969). Ground water is developed in the Toreva and Wepo formations. According to Cooley, wells in the vicinity range from 500 to 1000 feet deep.

7. Vegetation

The vegetation appears to be dominated by pinyon pine (Pinus edulis) and juniper (Juniperus scopulorum) with some ponderosa pine. Nearly all of the larger trees have been knocked down by unknown means and

the few individuals remaining are small and shrubby. Groundcover is 50-80 percent with abundant shrub species, including Gambel oak (Quercus gambelii), big sage (Artemesia tridentata), bitterbrush (Purshia tridentata), serviceberry (Amelanchier utahensis) and false mockorange (Fendlera rupicola). Also present on the site are Apache plume (Fallugia paradoxa), rabbitbush (Chrysothamnus sp.), roundleaf buffaloberry (Shepherdia rotundifolia), and prickly pear (Opuntia sp.). Important herbaceous vegetation, primarily grasses, include wheatgrass brome (Bromus tectorum) and wheatgrass (Agropyron sp.). The latter appears to have been recently seeded.

8. Resource Use Patterns

- a. Land Use - Most of the trees which formerly dominated the area are still lying where they fell. There is some evidence of collection of the downed trees for firewood.

The vicinity of the site is currently used for grazing. There are three grazing permits which encompass the site (Robert E. Begay, B.I.A. Tuba City, AZ, personal communication 1988).

Several hogans occur on Black Mesa within 5 miles of the site.

- b. Recreation - There was no evidence of recreational activities.

9. Wildlife

Wildlife cover is fair, with feeding cover quite good. Mourning dove (Zenaida macroura) and rufous-sided towhee (Pipilo erythrophthalmus) were the only birds observed. Flicker-sized woodpecker holes (3 inches in diameter) were noted on several of the downed trees. These cavities provide habitat for several wildlife species (Scott and Oldemeyer 1983).

10. Domestic Livestock

The three permittees for the site have a total of about 116 sheep units. A number of horses and cows were noted. Further evidence of this use appeared to be the heavily browsed condition of the shrubs in the area. Most of the shrubs are browsed down to a height of 12-18 inches.

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service (FWS), The Navajo Fish and Wildlife Department, and the Arizona Fish and Game Department (AFG) report the presence of peregrine falcons (Falco peregrinus) and/or peregrine habitat in the vicinity (see letters in Appendix B). An aerial survey conducted in June 1988, of the north-facing cliffs of Black Mesa, within two miles of the proposed site, revealed no raptor nests. See Appendix E for additional information on endangered and threatened species.

The AFG reported the potential presence of Navajo Mountain vole (Microtus mexicanus navaho) and southern spotted owl (Strix occidentalis) on Black Mesa. These species are listed as Category 2 by the FWS and are **considered threatened** by AFG. A Category 2 listing means the species are **not protected** but are being considered for listing as **endangered or threatened**. The FWS is gathering more ecological information on the species and its population.

12. Socioeconomics

- a. Population - The proposed site is located within the Kayenta Chapter and the Tuba City Agency. The 1988 population of the Kayenta Chapter is 5,735, which is about 25 percent higher than the 1980 estimate of 4,588 individuals. This represents a moderately lower population growth rate than for the entire Navajo Nation between 1970 and 1980. Approximately 87 percent of the 1988 population in the Kayenta Chapter is Indian (Ron Faisch, Navajo Community Development, Window Rock, AZ personal communication, 1988)

- b. Employment - The most current employment statistics for the Tuba City Agency are for 1986. In the Tuba City Agency that year, there were 10,437 employed and 6,959 unemployed persons. Of the unemployed workers, it is estimated that 4,523 continue to seek employment. This is equivalent to an unemployment rate of approximately 30 percent (this figure would be over 40 percent if all unemployed workers were counted, including those that are no longer seeking employment).
- c. Income - Income information for sites located on Navajo land is presented for the entire Navajo Nation. In 1979, the estimated per capita income was \$2,414 per year and the median family income was \$9,079 per year. The 1979 family income was \$8,342 per year (Ron Faisch, Navajo Community Development, Window Rock, AZ, personal communication, 1988). By comparison, the 1979 per capita income for the State of Arizona was \$7,042 (U.S. Department of Commerce, 1988).

13. Archaeology

A cultural resource survey conducted by the Navajo Nation Archaeology Department located no cultural resources within the project area (Langenfield 1988). A hogan with several associated structures currently in use is located near the beginning of the access route. Although the Lolamai Point area is known to have traditional Navajo religious associations, no traditional use or values were identified for the proposed project area. The Hopi Tribal Resources Committee identified the general area as a traditional eagle gathering area.

VI.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation, and maintenance of the proposed facility is not expected to have a noticeable effect on the topography, climate, geology, ground water, or socioeconomics.

1. Air Quality

During clearing and construction, fugitive dust may cause a temporary and insignificant decrease in air quality in the immediate vicinity. This impact would be low level and of short duration and would not extend beyond the construction phase. Operation and maintenance of the facility are not expected to noticeably affect air quality.

2. Soils

There is a low potential for soil erosion during construction due to the lack of steepness of the terrain. Because ground cover is fairly dense along the access road and the distribution line, the impacts to soils due to erosion would be low level.

3. Water

The removal of vegetation from the site and the access road would increase the potential for soil erosion and could subsequently increase sediment load and siltation of downstream water courses. This potential for impact to surface water quality may also result from the movement of equipment along the distribution line right-of-way. Impacts resulting from the decrease in water quality would be low level and short-term.

Water quality may also be adversely affected by contamination due to accidental release of petroleum products (gasoline, crankcase oil, hydraulic fluids, etc.) during routine operations. These operations may include refueling, changing fluids, and other maintenance activities.

4. Vegetation

Construction would require clearing of a 40,000 square-foot area for laydown of materials and movement of construction equipment. In addition, the 5,175-foot long, 12-foot wide access road would be cleared and grubbed. The tall, woody vegetation along the 2.7 mile long 20-foot wide distribution line right-of-way would be removed.

Large woody vegetation (shrubs and trees) would have to be removed to avoid interference with the operation of the facility and to prevent hazards to human safety. Trees that would interfere with operation of the distribution line would be removed. The woody vegetation would not be allowed to regrow for the life of the facility. The herbs and forbs would be impacted by the laydown of materials and the movement of equipment needed for construction. The impacts to vegetation would be long-term, but of low level.

5. Resource Use Patterns

Resource use patterns would not be noticeably affected by the construction, operation, and maintenance of the microwave facility.

6. Wildlife

During clearing and construction, wildlife species would disperse. This would be a short-term impact, as most species would return to the site following construction. Use of the site by elk and mule deer is not expected to change as a result of the proposed action. Moving the downed trees for the access road is not expected to significantly impact wildlife.

The distribution line and the microwave tower may slightly increase the potential for bird collisions. This is especially true where the line crosses the ravine associated with the ephemeral stream between the Lolamai Point site and the existing microwave facilities to the northeast. The impact of bird collisions with any of the microwave facility components would be a low level impact.

There is a possibility of bird electrocutions on the distribution line. However, it is unlikely that large numbers of raptors would perch on the poles because of the vegetation present in and around the site, and the mitigation measures discussed in Section VI.C.4 would minimize the potential for electrocutions. Impacts would be insignificant.

The presence of numerous roads on Black Mesa and the livestock present near the site, indicate that the secondary impact of increased accessibility would not be significant.

7. Domestic Livestock

Approximately 1.5 acres of vegetation will be permanently removed as a result of construction. The vegetation removed would not be available for domestic livestock utilization.

8. Endangered and Threatened Species

The potential presence of peregrine falcons was reported by resource agencies. An aerial survey of the cliffs on the north face of Black Mesa, conducted in June, 1988, did not reveal any raptor nest locations within two miles of the site. There was no evidence of the peregrine falcon noted within 2 miles of the proposed site.

There was no evidence of the two Category 2 species which were reported by the Arizona Fish and Game Department as potentially occurring near the site. (See Section VI.A.11, and letters in Appendix B). The habitat alterations which have occurred in the immediate vicinity of the site indicate the spotted owl will not be present. Groundcover did not appear to provide suitable habitat for the vole. See Appendix E for additional information on endangered and threatened species.

9. Archaeology

No cultural resources or known Navajo traditional religious values are present in the project area. Western conducted a raptor survey in the vicinity and along two miles of the nearby canyon walls and found no eagle nests are present. The short duration of construction activity and infrequency of maintenance activity at the facility would not interfere with any future eagle nesting that might occur in the area, and would not interfere with traditional Hopi practices. The currently used hogan is outside of the project area and will not be impacted.

VI.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion resulting from clearing and construction, the contractor would revegetate the areas where soil has been exposed, as soon as practical, following the last phase of construction. Revegetation would incorporate industry standards and would use plant species designated as acceptable by the Navajo Division of Resources.

2. Water

The measures described above for mitigating soils impacts would minimize sedimentation and siltation of water courses.

To avoid accidental contamination of surface waters, the contractor would not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Removal of large woody plant species is an unavoidable impact. By reseeding those areas where appropriate, as described in the Soils Section, the loss of vegetation would be minimized. Only those plants that would interfere with reliable operation or safety, would be removed, resulting in insignificant impacts to plant communities.

4. Wildlife

The habitat alterations resulting from clearing and construction is an unavoidable impact. The revegetation, described above, would minimize the impacts to wildlife.

The potential for bird collisions with the tower and distribution line is, with current technology, unavoidable, but the impacts would be insignificant.

In order to reduce the potential for bird electrocutions associated with the distribution line, the line will be designed in accordance with REA Bulletin 61-10 (Revised 1979) and the Suggested Practices for Raptor Protection on Powerlines (Olendorff et al 1981). By incorporating these measures, the possibility of electrocuting large birds will be minimized.

5. Domestic Livestock

There would be no significant loss of grazing capacity because the site would not be fenced.

PRESTON MESA SITE AND FACILITIES

PRESTON MESA SITE
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PRESTON MESA SITE

The proposed Preston Mesa site is located in Coconino County, Arizona, approximately 15 miles north of Tuba City, Arizona and about 22 miles south of Page, Arizona (see Figure PM-1). It is in the Tuba City Chapter of the Navajo Nation. The microwave facility would be jointly operated by Western and the Navajo Tribal Utilities Association (NTUA). There are existing facilities on Preston Mesa, including one adjacent to Western's proposed site. The proposed site would be 100 foot square with the 100-foot, self-supporting steel-lattice tower near the center. The facility would include a propane tank with two equipment buildings. All of these would require concrete foundations. Power would be provided by tapping an existing NTUA distribution line which runs through the northeast corner of the site. The 28 feet of distribution line would extend from an existing structure on NTUA's line to the equipment building. Access would be via existing roads except for approximately 18 feet of a new 12-foot wide access road that would require a 30-foot wide right-of-way.

VII.A. EXISTING ENVIRONMENT

1. Topography

The site is situated at an elevation of 6750 feet above sea level on a point of land at the south end of the Kaibito Plateau. From the proposed site, the topography drops off about 400 feet in one mile to the west, about 800 feet in one mile to the south, and about 500 feet in a mile to the east.

2. Climate

The region receives less than 10 inches of precipitation annually, mostly in the late summer and fall (Turner, 1982). Summers are hot and winters are cool to mild.

Figure PRESTON MESA

LOCATION

3. Air Quality

Air quality is generally good with some particulates, in the form of dust and sand, resulting from winds. There is little industrial pollution in the area.

4. Geology

The site lies on Preston Mesa anticline which is the longest anticline on the Navajo Reservation (Cooley et al 1969). The site lies in Navajo Sandstone, which consists of grayish-orange-pink, even-grained, highly crossbedded sandstone.

5. Soils

Soils have not been mapped. Discussions with Robert E. Begay, Bureau of Indian Affairs, Western Navajo Agency, Tuba City (personal communication 1988), indicated that, based on the vegetation present, the soils are primarily sandy loams. There is wind blown sand around the site in places to a depth of several feet.

6. Water

Runoff from Preston Mesa drains into the Little Colorado and Colorado Rivers. There is no open water within 1 mile of the site. Cooley et al. (1969) report that wells in the area are generally less than 500 feet deep.

7. Vegetation

Ground cover is less than 50 percent. The vegetation is dominated by pinyon pine (Pinus edulis) and juniper (Juniperus scopulorum). Shrub species include joint-fir (Ephedra viridis), bitterbrush (Purshia tridentata), big sage (Artemisia tridentata), rabbitbrush (Chrysothamnus nauseosus), hedgehog cactus (Echinocereus fendleri), Mohave prickly pear (Opuntia erinacea), and Yucca sp. Grasses include grama grass (Bouteloua sp.), desert needlegrass (Stipa speciosa), and Indian ricegrass (Oryzopsis hymenoides). Other herbs include plantain (Plantago sp.) and tumble mustard (Sisymbrium altissimum).

8. Resource Use Patterns

There appears to be insufficient timber on Preston Mesa to provide anything other than firewood collection. The site is currently used for microwave communication. There is one grazing permit which encompasses the Preston Mesa site (Robert E. Begay, B.I.A., Tuba City, AZ, personal communication 1988).

9. Wildlife

Wildlife cover appears good. The pinyon-juniper overstory provides escape and resting cover for several wildlife species, including mule deer (Odocoileus hemionus), cottontails (Sylvilagus sp.) and numerous bird species. Wildlife observed include woodrat (Neotoma cinerea), scrub jay (Aphelocoma coerulescens), and westernhouse finch (Carpodacus mexicanus).

10. Domestic Livestock

There was no evidence of current domestic livestock use of the site. The grazing permit allows 100 sheep units for summer grazing only.

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service has reported no endangered, threatened, or sensitive species occurring in the vicinity. The Navajo Fish and Wildlife Department has indicated that the site lies in marginal to unsuitable habitat for the endangered peregrine falcon (Falco peregrinus) (see letters in Appendix B).

12. Socioeconomics

- a. Population - The proposed site is located within the Tuba City Chapter and the Tuba City Agency. The 1988 population of the Tuba City Chapter is 8,163 which is about 30 percent higher than the 1980 estimate of 5,416 individuals. This represents a moderately lower population growth rate than for the entire Navajo Nation between 1970 and 1980.

- b. Employment - The most current employment statistics for the Tuba City Agency are for 1986. In that year, there were 10,437 employed and 6,959 unemployed persons. Of the unemployed workers, it is estimated that 4,523 continue to seek employment. This is equivalent to an unemployment rate of about 26 percent (this figure would be about 40 percent if all unemployed workers were counted, including those that are no longer seeking employment).
- c. Income - Income information for sites located on Navajo land is presented for the entire Navajo Nation. In 1979, the estimated per capita income was \$2,414 per year and the median family income was \$9,079 per year. The 1979 family income was \$8,342 per year (Faisch, Navajo Department of Community Development personal communication, 1988). By comparison, the 1979 per capita income for the State of Arizona was \$7,042 (U.S. Department of Commerce, 1988).

13. Archaeology

A cultural resource survey conducted by the Navajo Nation Archaeology Department located no cultural resources in the project area (Langenfield 1988). The Navajo Historic Preservation Office identified the Preston Mesa area as containing traditional Navajo religious values. The Hopi Tribal Resources Committee identified the general area as a traditional eagle gathering area.

VII.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation, and maintenance of the proposed facility are not expected to have a noticeable effect on the topography, climate, geology, ground water, or socioeconomics.

1. Air Quality

During clearing and construction, fugitive dust may cause a temporary decrease in air quality in the immediate vicinity. This impact would be insignificant and would not extend beyond the construction phase. Operation and maintenance of the facility are not expected to noticeably affect air quality.

2. Soils

Because the soils are sandy, there is some potential for soil erosion during construction. The potential is greater on this site because the erosion can be caused by either water or wind. Impacts to soils resulting from erosion would be short-term and low level.

3. Water

The removal of vegetation would increase the potential for soil erosion and could subsequently increase sediment load and siltation of downstream water courses. These potential impacts to surface waters would be low level and short-term.

Water quality may also be adversely affected by contamination due to accidental release of petroleum products (gasoline, crankcase oil, hydraulic fluids, etc.) during routine operations. These operations may include refueling, changing fluids, and other maintenance activities.

4. Vegetation

Construction would require clearing of a 10,000 square-foot area for laydown of materials and movement of construction equipment. In addition, the 18-foot long, 12-foot wide access road would be cleared. Large woody vegetation (shrubs and trees) would have to be removed to avoid interference with the operation of the facility and to prevent hazards to human safety. Herbs and forbs would be impacted by the laydown of materials and the movement of equipment needed for construction. The impacts to vegetation would be long term but of low level and would not be significant.

5. Resource Use Patterns

The area is dedicated to microwave facilities. Resource use patterns would not be affected.

6. Wildlife

During clearing and construction, wildlife species would disperse. This would be a short-term impact, as most species would return to the area following construction. Use of the site by big game species, such as mule deer, is not expected to change as a result of the proposed action.

Because the site has an existing distribution line, and there are other microwave towers in the immediate vicinity, the potential for bird collisions is not expected to increase. For these same reasons, the potential for electrocutions of large birds is not expected to increase.

The presence of other microwave facilities, and the numerous roads in the area, indicate that the secondary impact of increased accessibility would not be significant.

7. Domestic Livestock

There will be approximately 1200 square feet of vegetation permanently removed as a result of construction. The vegetation removed would not be available for utilization by domestic livestock, resulting in a loss of less than one sheep unit, which is not considered significant.

8. Endangered and Threatened Species

There are no endangered or threatened species reported for the Preston Mesa site (see letter in Appendix B). No endangered or threatened species would be affected.

9. Archaeology

No cultural resources are present within the project area. No traditional Navajo religious values were identified in the project area. The general vicinity of the project area is considered unsuitable for eagle habitat. No eagle nests are known in the area. The short duration of construction activity and the infrequency of maintenance activity at the facility would not interfere with eagle nesting or traditional eagle feather gathering activities.

I.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion resulting from clearing and construction, the contractor would revegetate the areas where soil has been exposed, as soon as practical, following the last phase of construction. Revegetation would incorporate industry standards and would use plant species designated as acceptable by the Navajo Division of Resources.

2. Water

The measures described for mitigation of soils impacts would minimize impacts relating to sedimentation and siltation of water courses.

To avoid accidental contamination of surface waters, the contractor would not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Removal of large woody plant species is an unavoidable impact. By reseeding those areas where appropriate, as described in the Soils Section, the loss of vegetation would be minimized. Only those plants whose presence would interfere with reliable operation or safety, would be removed, resulting in insignificant impacts to plant communities.

4. Wildlife

The habitat alterations resulting from clearing and construction is an unavoidable impact. The revegetation, described above, would minimize many of the impacts to wildlife. Impacts to wildlife would be insignificant.

5. Domestic Livestock

There would be no significant loss of grazing capacity in the vicinity of the site because the area will not be fenced.

MOENKOPI SITE AND FACILITIES

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MOENKOPI SITE

The proposed Moenkopi site is located in Coconino County, Arizona, approximately 3 miles south of Cameron, Arizona. It is in the Cameron Chapter of the Navajo Nation. The site is situated on the east side of U.S. Highway 89 (see Figure MO-1), in the SE 1/4, Section 4, T28N, R9E. There are several high voltage transmission lines and one distribution line in the immediate vicinity of the proposed site. The site would be a 100-foot square (0.23 acre) with the 40-foot, self-supporting steel-lattice tower located near the center. The facility would include an equipment building and a propane tank, both of which would require concrete foundations. The site would be enclosed by an eight-foot high chain link fence. Power to the site would be provided by tapping the Arizona Public Service (APS), 12.5-kV distribution line just north of the site and constructing a 190-foot long tap line. Access would be along the existing access road for the APS 345-kV line to a point just north of the distribution line, then would follow the existing access road of the distribution line until it crosses south of that line, at which time the access road would become overland (not require grading) and enter the south side of the site. The new portion of the access road would be 2,120 feet long, 12-feet wide and located in a 30-foot-wide right-of-way .

VIII.A. EXISTING ENVIRONMENT

1. Topography

The site is situated at an elevation of about 4500 feet above sea level. The terrain is fairly level with some small hills and terraces. The elevation change in these terraces and hills is less than 10 feet within one-quarter mile of the site. The only major topographical changes in the area are the Little Colorado River Canyon, about three miles north, and the drop to the Painted Desert which lies about four miles to the east.

Figure MOENKOPI M

LOCATION

re MO-1 MICROWAVE SITE

SITE LAYOUT

2. Climate

The site receives less than 10 inches of precipitation annually. Most of this occurs in the late summer and early fall (Turner, 1982). The summers are hot with cool to mild winters.

3. Air Quality

Air quality is generally good. Dust and particulates are present as wind blown debris.

4. Geology

The site rests on the Shinarump Member of the Chinle Formation, which was laid down in the Triassic. The Shinarump Member consists of gray sandstones and siltstones and conglomerates (Cooley et al 1969). This formation is known to contain bentonite. There are no known faults in the area, however the region south of the Moenkopi site shows evidence of historic and prehistoric vulcanism.

5. Soils

Soils on the site have not been mapped. They appear to be in a class of "desert pavement" which is a substrate overlain by rocks of varying sizes. Based on soils information from an area south of the site and the vegetation present, the soils are probably in the Winona-Tusayan-Boysag map unit (Taylor 1983).

6. Water

The open water nearest to the site is in the Little Colorado River, 3 miles north, near the town of Cameron. Cooley, et al., (1969) report that wells drilled in the vicinity vary in depth from less than 500 feet deep up to 1000 feet deep.

7. Vegetation

Ground cover on the site is less than 25 percent. Vegetation is dominated by shadscale (Atriplex confertifolia), although this shrub is widely scattered with large patches of open earth. Other shrubs

include joint-fir (Ephedra viridis), snakeweed (Gutierrezia sarothrae), rabbitbush (Chrysothamnus Greenei) and Apache plume (Fallugia paradoxa). Widely scattered herbs and forbs include cheatgrass brome (Bromus tectorum), wheatgrass (Stipa sp.) and poppymallow (Sphaeralcea sp.).

8. Resource Use Patterns

- a. Land Use - Other than the power lines in the area, and U.S. Highway 89, there was no evidence of recent human use. There is insufficient woody material for firewood gathering.

There are three grazing permits issued for the area. (Robert E. Begay, B.I.A., Tuba City, AZ (personal communication, 1988)

- b. Recreation - There are no designated recreation areas within 5 miles of the proposed site.

9. Wildlife

Other than the few low-growing shrubs, there is little wildlife cover. The only wildlife species observed was a fence lizard (Sceloporus occidentalis).

10. Domestic Livestock

There was no evidence of domestic animal utilization of the site. Three grazing permits allow a total of 258 sheep units.

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service, the Navajo Fish and Wildlife Department and the Arizona Department of Game and Fish have indicated that the site is within the potential range of the cactus (Pediocactus peeblesianus var. fickeiseniae) (see letters in Appendix B). This species is not protected as an endangered or threatened but is a Category 1 species, which means that it is under consideration for

listing, and its potential presence should be incorporated in the planning of a proposed action. A survey for this species was conducted and no evidence of it was found. No other endangered, threatened, or sensitive species are known to occur in the vicinity.

12. Socioeconomics

- a. Population - The proposed site is located within the Cameron Chapter and the Tuba City Agency. The 1988 population of the Cameron Chapter is 1,118, which is about 20 percent higher than the 1980 estimate of 932 individuals. This represents a moderately lower population growth rate than for the entire Navajo Nation between 1970 and 1980. Approximately 86 percent of the 1988 population in the Cameron Chapter is Indian (Ron Faisch, Navajo Community Development, Window Rock, AZ, personal communication, 1988).
- b. Employment - The most current employment statistics for the Tuba City Agency is for 1986. In that year, there were 10,437 employed and 6,959 unemployed persons. Of the unemployed workers, it is estimated that 4,523 continue to seek employment. This is equivalent to an unemployment rate of about 30 percent (this figure would be over 40 percent if all unemployed workers were counted, including those that are no longer seeking employment).
- c. Income - Income information for sites located on Navajo land is presented for the entire Navajo Nation. In 1979, the estimated per capita income was \$2,414 per year and the median family income was \$9,079 per year. The 1979 family income was \$8,342 per year (Faisch, Navajo Community Development, personal communication, 1988). By comparison, the 1979 per capita income for the State of Arizona was \$7,042 (U.S. Department of Commerce, 1988).

13. Archaeology

A cultural resource survey conducted by the Navajo Nation Archaeology Department recorded one small prehistoric lithic scatter (AZ-N-12-2) and four isolated artifacts (Langenfield 1988). The lithic scatter was determined to be eligible for inclusion in the National Register based on its potential to yield important information. No traditional religious values were identified in the vicinity of the project area.

VIII.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation, and maintenance of the proposed facility is not expected to have an effect on the topography, climate, geology, ground water, or socioeconomics.

1. Air Quality

During clearing and construction, fugitive dust may cause a temporary decrease in air quality in the immediate vicinity. This impact would be insignificant and would not extend beyond the construction phase of the proposed action. Operation and maintenance of the facility will not affect air quality.

2. Soils

There is a low potential for soil erosion during construction. Improvement of the existing road may increase the possibility of soil erosion. Impacts to soils due to erosion will be low level.

3. Water

The removal of vegetation may increase the potential for soil erosion and could subsequently increase sediment load and siltation of downstream water courses. These potential impacts to surface waters will be low level and short-term.

Water quality may also be adversely affected by contamination due to accidental release of petroleum products (gasoline, crankcase oil, hydraulic fluids, etc.) during routine operations. These operations may include refueling, changing fluids, and other maintenance activities.

4. Vegetation

Construction would require the clearing of a 10,000 square-foot area for laydown of materials and movement of construction equipment. In addition, the 2,120-foot long, 12-foot wide access road would be cleared and grubbed. There is no large woody vegetation. All shrubs and herbaceous vegetation within the 100-foot square and along the access road and along the distribution line tap would be impacted by the laydown of materials and the movement of construction equipment. The impacts to vegetation would be low level but long-term and would not be significant.

5. Resource Use Patterns

The presence of the high voltage transmission lines and the distribution lines around the site indicate that resource use patterns would not be noticeably affected by the proposed action.

6. Wildlife

During clearing and construction, wildlife species would disperse. This would be a short-term impact as most species would return to the area following construction. Use of the site by big game species would be curtailed for the life of the facility because of the fence. Because the site provides little habitat for big game species, this impact would be low level.

The presence of the existing electrical facilities at the site indicates that the potential for bird electrocutions and bird collisions are not expected to increase measurably as a result of the

proposed action, nor would the secondary impact of increased human accessibility be significant.

7. Domestic livestock

The entire 10,000 square feet of the site would be unavailable to domestic livestock for the life of the facility, as would the 25,440 square feet of the access road. This impact would be low level (less than 1 sheep unit), but long-term.

8. Endangered and Threatened Species

The Category 1 plant species, Pediocactus peeblesianus var. fickeiseniae, was not found on the site or the access road. No endangered or threatened species are reported to occur in the vicinity. The project would not have a significant impact to endangered, threatened, or sensitive species. See Appendix E for additional information on endangered and threatened species.

9. Archaeology

The prehistoric lithic scatter (AZ-N-12-2) was located in the proposed route of the access road to the microwave facility. Western has rerouted the road to avoid the site. There will be no impacts to cultural resources or traditional religious practices.

VIII.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion resulting from clearing and construction, the contractor would revegetate the areas where soil has been exposed, as soon as practical, following the last phase of construction. Revegetation would incorporate industry standards and would use plant species designated as acceptable by the Navajo Division of Resources.

2. Water

The measures described for mitigation of soils impacts would minimize any impacts relating to sedimentation and siltation of water courses.

To avoid accidental contamination of surface waters, the contractor would not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Impacts to plant species is an unavoidable impact. By reseeding those areas where appropriate, as described in the Soils Section, the loss of vegetation would be minimized. Removing only those plants that would interfere with reliable operation or safety, would limit impacts to plant communities.

4. Wildlife

The habitat alterations resulting from clearing and construction is an unavoidable impact but would be insignificant. The revegetation, described above, would minimize many of the impacts to wildlife.

5. Domestic Livestock

The need for security of the facility close to a major highway, requires that a fence be provided around the entire site. The loss of less than one sheep unit of grazing capacity is an unavoidable impact.

MINGUS MOUNTAIN SITE AND FACILITIES

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MINGUS MOUNTAIN SITE

The proposed Mingus Mountain site is located in the Prescott National Forest in Yavapai County, Arizona, approximately 3 miles south of Jerome, Arizona, and approximately 6 miles southwest of Cottonwood, Arizona (see Figure MM-1). The site is in an unsurveyed portion of T15N, R2E. There are numerous existing microwave facilities, both passive and active, including an MCI facility and a Yavapai County Communication Site which are adjacent to Western's proposed facility. The site would consist of four lots (0.23 acre) making a square 100 foot on a side, with the 70-foot tall, self-supporting tower set about 25 feet north of the center of the square. The site would contain a propane tank and an equipment building, both of which would require concrete foundations. Power to the site would be furnished by tapping an existing Arizona Public Service distribution line which crosses the southern corner of the site. The tap line would be approximately 150 feet long. Access would be via an existing gravel road to within 190 feet of the site. Western would construct a 12-foot wide gravel road the remaining 190 feet in a 30-foot wide right-of-way.

IX.A. EXISTING ENVIRONMENT

1. Topography

The site is situated at an elevation of 7815 feet above sea level. Elevation changes in one mile to the north and to the east are 1200 feet and 1600 feet, respectively. The ground is fairly level to the west and south.

2. Climate

The area receives about 15 inches of precipitation annually. The precipitation occurs fairly evenly throughout the year, with May and June being the driest months (Brown 1982). Summers are warm to hot, depending on elevation, with winters mild to cold, again depending on altitude (Brown, 1982).

Figure MINGUS MOUNTAIN

LOCATION

re MM-1 IN MICROWAVE SITE

SITE LAYOUT

3. Air Quality

Air quality is generally good, with most pollutants being airborne dust and particulates. These are probably the result of the mining activities in the region, and also occur as natural windborne particulates.

4. Geology

Mingus Mountain lies on the west side of Verde River Valley. The valley contains two branches of the Verde Fault, one of which runs northwest to southeast, near the town of Jerome. The mountain itself is composed of Precambrian gneiss, overlain by Paleozoic rocks, which are capped by lava. The Verde Valley has been mined in the recent past for copper, silver, gold and zinc (Chronic, 1983).

5. Soils

The U.S. Forest Service has indicated the soils are sandy loams and loams with some clayey loams in the area. Some of these soils may be highly erodible when groundcover is removed (Suraj Ahuja, Prescott National Forest, Camp Verde, AZ, personal communication, 1988).

6. Water

Within 1 mile of the Mingus Mountain site, there are several small (less than 2 acres) reservoirs. These were established by earthen dams across natural drainages. Numerous ephemeral drainages carry water to the Verde River.

7. Vegetation

The dominant cover type is ponderosa pine (Pinus ponderosa). Gambel's oak (Quercus gambelii) and Alligator juniper (Juniperus deppeana) are the most common shrubs, except for smaller individuals of the canopy species. Ground cover is extremely sparse, less than 25 percent, with only scattered clumps of wheatgrass (Agropyron sp.) found.

8. Resource Use Patterns

- a. Land Use - The site has been dedicated by the U.S. Forest Service as a microwave and electronics facility site. Most of the top of Mingus Mountain has been divided into lots that are 50-foot squares. These are then leased to organizations needing communication facility sites.
- b. Recreation - There is no hunting or timbering allowed on the site except as needed for construction. A small campground is located approximately three-quarters of a mile to the west.

9. Wildlife

Wildlife cover is sparse. One large snag (a standing dead tree), with five cavities, occurs near the middle of the site. No mammals were noted, however several bird species occur in and around the proposed site. The birds observed include, solitary vireo (Vireo solitarius), chipping sparrow (Spizella passerina), hairy woodpecker (Dendrocopus villosus), western wood pewee (Contopus sordidulus), brown creeper (Certhia familiaris), western bluebird (Sialia mexicana), mountain chickadee (Parus gambeli), and western tanager (Piranga ludoviciana). Several small lizards were also noted.

10. Domestic Livestock

There were no domestic livestock noted.

11. Endangered and Threatened Species

The U.S. Fish and Wildlife Service and the Arizona Department of Game and Fish have not reported any endangered, threatened, or sensitive species occurring in the vicinity (see letters in Appendix B).

12. Socioeconomics

Population - The proposed site is located within Yavapai County, Arizona. The 1986 population for Yavapai County was 87,900, or about

29 percent higher than the 1980 estimate of 68,145. By comparison, between 1980 and 1986, the population for the State of Arizona increased by 81 percent.

Employment - The most current employment statistics for Yavapai County are for mid-1988. According to the Bureau of Labor Statistics, the mid-1988 unemployment rate for Yavapai County was 6.7 percent, with a total employment of 35,775 and 2,525 unemployed individuals. The 1988 unemployment estimate for the State of Arizona is 7.0 percent.

Income - Per capita income for the County in 1985 was \$8,944, or moderately less than the statewide average for 1985 of \$10,561. Between 1979 and 1985, the per capita income for residents of Yavapai County increased by about 6.4 percent per year. In contrast to this trend, and during the same time period, per capita income for all residents of Arizona grew by 8.3 percent per year.

13. Archaeology

A cultural resource survey conducted by the U.S. Forest Service reported no sites in the project area (McCormick 1988).

IX.B. ENVIRONMENTAL CONSEQUENCES

The construction, operation, and maintenance of the proposed facility is not expected to have a noticeable effect on the topography, climate, geology, ground water, or socioeconomics.

1. Air Quality

During clearing and construction, fugitive dust may cause a temporary decrease in air quality in the immediate vicinity. This impact would be insignificant and would not extend beyond the construction phase. Operation and maintenance of the facility are not expected to noticeably affect air quality.

2. Soils

There is some potential for soil erosion during construction. Impacts to soils due to erosion would be low level.

3. Water

The removal of vegetation may increase the potential for soil erosion and could subsequently increase sediment load and siltation of downstream water courses. These potential impacts to surface water would be low level and short-term.

Water quality may also be adversely affected by contamination due to accidental release of petroleum products (gasoline, crankcase oil, hydraulic fluids, etc.) during routine operations. These operations may include refueling, changing fluids, and other maintenance activities.

4. Vegetation

Construction would require clearing of a 10,000 square-foot area for laydown of materials and movement of construction equipment. In addition, the 190-foot long, 12-foot wide access road would be cleared. Large woody vegetation (shrubs and trees) would have to be removed to avoid interference with the operation of the facility and to prevent hazards to human safety. Herbs and forbs would be impacted by the laydown of materials and the movement of equipment needed for construction. The impacts to vegetation would be long-term but of low level.

5. Resource Use Patterns

The top of Mingus Mountain has been dedicated by the U.S. Forest Service for use by electronic communication facilities. Therefore, there would be no effect on the resource use patterns.

6. Wildlife

During clearing and construction, wildlife species would disperse. This would be a short-term impact as most species would return following construction. Removal of the snag in the middle of the site may have a long-term impact on a few wildlife species. Although four of the eight bird species noted during a site visit are cavity nesters, impact would be insignificant. Use of the site by big game species is not expected to be affected.

The presence of other microwave facilities and the existing distribution line indicate that the potential for bird electrocutions and bird collisions, and the secondary impacts associated with increased accessibility would not be significant.

7. Domestic Livestock

There is no livestock use of the proposed site.

8. Endangered and Threatened Species

The FWS indicated that no endangered and threatened species occur on Mingus Mountain (see letter in Appendix B). Western's proposed action is not expected to affect endangered, threatened, or sensitive species.

9. Archaeology

No cultural resources will be impacted by the project.

IX.C. MITIGATION MEASURES

1. Soils

To reduce soil erosion resulting from clearing and construction, the contractor would revegetate the areas where soil has been exposed, as soon as practical, following the last phase of construction. Revegetation would incorporate industry standards and would use plant species designated as acceptable by the U.S. Forest Service.

2. Water

The measures described for mitigation of soils impacts would minimize impacts relating to sedimentation and siltation of water courses.

To avoid accidental contamination of surface waters, the contractor would not handle petroleum products within 100 feet of any permanent or ephemeral water courses.

3. Vegetation

Removal of large woody plant species is an unavoidable impact. By reseeded those areas where appropriate, as described in the Soils Section, the loss of vegetation would be minimized. Only those plants whose presence would interfere with reliable operation or safety, would be removed resulting in no significant impacts to plant communities.

4. Wildlife

Habitat alterations resulting from clearing and construction is an unavoidable impact but would not be significant. The loss of the large snag near the middle of the site would be an unavoidable adverse impact but would not significantly affect wildlife. The revegetation described above would minimize many of the impacts to wildlife.

APPENDIX A

LITERATURE CITED

LITERATURE CITED

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APPENDIX B

CONSULTATION AND COORDINATION

WITH OTHERS

APPENDIX B

Consultation and Coordination With Others

<u>Federal</u>	<u>State/Navajo Nation</u>
U.S. Department of Agriculture Prescott National Forest	Clay Jemmett, Prescott, AZ Suraj Ahuja, Prescott, AZ Thomas Bonomo, Camp Verde, AZ Karl McCormick, Camp Verde, AZ Jim McKee, Camp Verde, AZ
Soil Conservation Service	Deb Prevost, Flagstaff, AZ Joe Chlaretti, Shiprock, NM Mike Rich, Cortez, CO Dean Stoudt, Norwood, CO
U.S. Department of the Interior Bureau of Indian Affairs	Jim Analla, Gallup, NM Mary Lujan, Shiprock, NM Randy Cornett, Shiprock, NM George Abe, Tuba City, AZ Robert E. Begay, Tuba City, AZ Will Sherman, Tuba City, AZ Gary Norton, Keams Canyon, AZ Kathy Gratz, Windowrock, AZ James Copeland, Windowrock, AZ James Stevens, Windowrock, AZ Floyd Espinoza, Windowrock, AZ
Bureau of Land Management	Sally Wisely, Durango, CO Katherine Bolinski, Durango, CO Mark Hollis, Durango, CO Kate Kitchell, Montrose, CO Alex Van Hemert, Monticello, UT
Fish and Wildlife Service	Russell Earnest, Albuquerque, NM Peggy Olwell, Albuquerque, NM Sue Rutman, Phoenix, AZ Bob Benton, Salt Lake City, UT
State of Arizona Game & Fish Department	Robert Weaver, Phoenix, AZ John Carr, Phoenix, AZ
Historic Preservation Office	Bob Gasser, Phoenix, AZ

State of Colorado	
Division of Wildlife	Bob Clark, Montrose, CO Gary Skiba, Durango, CO
Historic Preservation Office	Jim Green, Denver, CO
State of Utah	
Division of Wildlife	Larry Dalton, Price, UT Bill Geer, Salt Lake City, UT
Historic Preservation Office	Diana Christensen, Salt Lake City, UT
Division of Parks and Recreation	Steve Olsen, Blanding, UT
Navajo Nation	
Division of Resources	Harry Yazzie, Windowrock, AZ Lena Yazzie, Windowrock, AZ
Fish and Wildlife	Kathleen McCoy, Windowrock, AZ John Nystedt, Windowrock, AZ Larry Benallie, Sr., Windowrock, AZ
Division of Community Development	Dr. Ron Faisch, Windowrock, AZ
Environmental Protection Office	Carol Lowery, Windowrock, AZ
Historic Preservation Office	Alexia Roberts, Windowrock, AZ
Tribal Utility Authority	Mel Apachee, Fort Defiance, AZ
Hopi Tribe	
Tribal Resources Council	Robinson Honani, Kykotsmovi, AZ
Upper Moenkopi Village	LeRoy Shingoitewa, Tuba City, AZ

United States Department of the Interior

FISH AND WILDLIFE SERVICE
POST OFFICE BOX 1306
ALBUQUERQUE, N.M. 87103

In Reply Refer To:
Region 2/FWE

JAN 8 1988

2-21-88-I-33

Mr. Lloyd Grenier
Area Manager
Department of Energy
Western Area Power Administration
Salt Lake City Area Office
P.O. Box 11606
Salt Lake City, UT 84147

GOOD
2000
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2300
2510
SRS
SRS
1-12-88
1-12-88
1-12-88

Dear Mr. Grenier:

This responds to your request of December 2, 1987, for information on species listed or proposed to be listed as threatened or endangered as provided by the Endangered Species Act of 1973, as amended, that may be affected by the proposed South Microwave System in Apache, Coconino, Navajo, and Yavapai Counties, Arizona, Montezuma and San Miguel Counties, Colorado, and San Juan County, Utah. This letter contains information obtained from Fish and Wildlife Service offices in Arizona, Colorado, and Utah and addresses the eight proposed microwave sites.

Our data indicate that some of the proposed sites may support endangered or threatened species. We have summarized this information for each proposed site.

ARIZONA

Lolamai Point - This site is within historic habitat for the endangered peregrine falcon (Falco peregrinus). We recommend that surveys for peregrine falcon (peregrine) nests be conducted along the cliffs during the spring breeding period. Potential peregrine areas as far as 4 or 5 miles away from the microwave site or transmission line should be searched. Construction noise and powerline installation may affect this species by disrupting their reproductive and foraging behavior in addition to causing their injury or mortality.

Mingus Mountain - None.

Moenkopi - No listed or proposed species are present, however, a candidate category 1 species, Pediocactus peeblesianus var. fickeinseniae, has been reported from the Cameron-Moenkopi area. Candidate category 1 species are not protected under the Endangered Species Act, however, we recommend the site be surveyed for this cactus.

Preston Mesa - None.

Teec Nos Pos - None.

COLORADO

Cow Point - Historic habitat for the black-footed ferret (Mustela nigripes) exists within the project area. If your pre-construction surveys indicate prairie dog colonies would be impacted by the proposed action, surveys for black-footed ferrets would be needed (enclosed). Wintering bald eagles (Haliaeetus leucocephalus) are also in the project area. The powerline should be designed to prevent accidental electrocution of bald eagles and other raptor species. These designs are available from the Raptor Research Foundation's 1981 report "Suggested Practices for Raptor Protection on Power Lines".

Sand Rock - None.

UTAH

Mexican Hat - None.

If we may be of further assistance, please contact Gary Halvorson at FTS 474-2914 or for specific state information: Arizona - Leslie Fitzpatrick at FTS 261-4720; Colorado - John Anderson at FTS 322-0348; or Utah - Don Archer at FTS 588-4430.

Sincerely,

Deputy Regional Director

Enclosure

cc: (w/cy enclosure)
Regional Director, FWS, Denver, CO (FWE/SE)
Field Supervisors, Fish and Wildlife Enhancement, FWS, Salt Lake City, Utah
and Grand Junction, Colorado
Field Supervisor, Ecological Services, FWS, Phoenix, Arizona

United States Department of the Interior

FISH AND WILDLIFE SERVICE
POST OFFICE BOX 1306
ALBUQUERQUE, N.M. 87103

APR 21 1989

No. 2-21-88-1-33

In Reply Refer To
Region 2 FWE HC
CL 4-70

Mr. Lloyd Greiner
Western Area Power Administration
Department of Energy
P.O. Box 11606
Salt Lake City, Utah 84147

Dear Mr. Greiner:

The Fish and Wildlife Service (Service) has reviewed your April 7, 1989, revised biological assessment of impacts to listed and proposed threatened and endangered species from the proposed South Microwave Project in Arizona, Colorado, and Utah, and has the following comment.

The Service concurs with your finding of no adverse effect to listed or proposed species from the project.

Thank you for the opportunity to provide comment. If we may be of further assistance, please contact us.

Sincerely,

Regional Director

cc:

Field Supervisor, Fish and Wildlife Service, Ecological Services, Grand Junction, CO
Field Supervisor, Fish and Wildlife Service, Ecological Services, Salt Lake City, UT
Field Supervisor, Fish and Wildlife Service, Ecological Services, Phoenix, AZ

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ma 5/2

THE

HOPI TRIBE

Ivan L. Sidney
CHAIRMAN

VERNON MASAYESVA
VICE-CHAIRMAN

September 08, 1988

In reply refer to: Resources Committee

Ms. Kathleen E. Gratz
Area Archeologist
Navajo Area Office
Post Office Box M
Window Rock, AZ 86515

Dear Ms. Gratz:

Pursuant to a telephone conversation on September 7, 1988, the following comments are made:

We are in receipt of your letter dated August 18, 1988. We will respond and make comment in detail at a further date when proper contacts are made with the affected leadership.

Initially, we see that the Lolomi site is of religious significant to the Hopi because of eagle nesting and gathering area belonging to the Eagle Clan. The Preston Mesa site is also similar in significance to the Lolomi site. The Parrot clan has claim to the Preston Mesa area. As for the other sites, we will comment when we contact the proper people knowledgeable of the area.

We request that you or your representative be here to give a presentation to the Resources Committee. The next scheduled meeting is on September 20, 1988 at the Hopi Tribal Council Chambers, beginning at 9:00 a.m. (M.S.T.)

Sincerely,

Violet Laban p.th

Violet Laban, Chairperson
Hopi Tribal Resources Committee

cc: Committee file

C-305A

9-305 EQ

RECEIVED

SEP 19 1988

SA HAS
ARCHAEOLOGY

THE NAVAJO NATION

PETER MacDONALD, CHAIRMAN
THE NAVAJO TRIBAL COUNCIL
JOHNNY R. THOMPSON, VICE CHAIRMAN
THE NAVAJO TRIBAL COUNCIL

NTM-88-386

October 5, 1988

Mr. T. R. Tippeconnic
Assistant Area Director
Bureau of Indian Affairs
Navajo Area Office
PO Box M
Window Rock, Arizona 86515

ATTN: Area Archaeologist

Dear Mr. Tippeconnic:

We are in receipt of your letter regarding the construction of five proposed microwave facilities in the areas of Mexican Hat, Teec Nos Pos, Kayenta, Kaibito and Cameron, by the Western Area Power Administration. At least two of the proposed construction areas, Lolamai Point and Preston Mesa, are locations of known Navajo religious and historical significance. Any prominent geographic features such as these may potentially be of Navajo cultural significance. Therefore, this office requires the project Sponsor to consult with the officials of each chapter regarding the cultural significance of each proposed project location, prior to any project implementation. It may be most efficient to conduct such consultations concurrently with the cultural resources inventory of each location. Our office will concur with the Bureau of Indian Affairs approval to proceed only after we have received satisfactory documentation of the chapter consultations. If you have any questions, please do not hesitate to contact me at (602) 871-6438.

Sincerely,

Alan S. Downer
Historic Preservation Officer

RECEIVED

OCT 19 1988

BIA Area
ARCHAEOLOGY

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OCT - 6 1988

ASSISTANT AREA DIRECTOR (Res.)

18117
RECEIVED

JAN 31 1989

CULTURAL RESOURCES COMPLIANCE FORM
DOI BUREAU OF INDIAN AFFAIRS
NAVAJO AREA OFFICE
P.O. BOX M
WINDOW ROCK, ARIZONA 86515

ROUTING:	COPIES TO	NAO PROJECT NO.	NTM-88-386
<u>AZ/UT</u>	S.H.P.O	OTHER PROJECT NO.:	
<u>X</u>	NAVAJO NATION HISTORIC	<u>NNAD-88-286</u>	
	PRESERVATION OFFICE		
<u>X</u>	NAVAJO NATION ARCHEOLOGY		
	DEPARTMENT	ENVIRONMENTAL DATA:	
<u>WNA/NNA</u>	AGENCY	See report	
<u>X</u>	REAL PROPERTY MGMT/330		

PROJECT TITLE: An Archaeological Survey for the Proposed Salt Lake City South Microwave System on the Navajo Reservation, Utah and Arizona

LAND STATUS: Tribal Trust
FORM PREPARED BY: James Copeland
PROJECT ARCHEOLOGISTS: Kristin Langenfield

SPONSOR: J. F. Sato and Associates, 1667 Cole Blvd., Suite 285, Golden, Colorado 80401

DATE INSPECTED: 8/22-26/88
DATE OF REPORT: 10/25/88
TOTAL ACREAGE INSPECTED: 32.56 Acres (13.19 ha)
METHOD OF INVESTIGATION: Class III parallel pedestrian transects spaced ca. 10 m apart.

PROJECT LOCATION (LEGAL AND UTM): Scattered locations in Arizona and Utah. See report for details.

PROJECT DESCRIPTION: Construction of three microwave towers, associated facilities, access routes, and power lines. See report.

NO. OF CULTURAL RESOURCES FOUND: 3 sites, 8 isolated occurrences, 3 in-use "sites".

LIST OF ELIGIBLE PROPERTIES: AZ-I-8-29, AZ-I-8-30, AZ-N-12-2

FEDERAL ANTIQUITIES PERMIT NO.: None

NAVAJO TRIBAL ANTIQUITIES PERMIT NO.: None

EFFECT/CONDITIONS OF COMPLIANCE: Follow report recommendation Option 1 or 2 at Teec Nos Pos Location. Follow report Option A or B at the Moenkopi location. If Option B is chosen, a research design must be prepared and submitted to this office prior to any

fieldwork. No conditions for Lolami Point, Preston Mesa, or Mexican Hat locations. The undertaking shall be confined to areas investigated by this report. In the event of a discovery, cease operations and notify the NAO Area Archeologist at (602) 871-5151, extension 5128.

Notification to

Proceed Approved:
Conditions

Yes No
Yes ✓ No

James M. Boydland
Kathleen E. Gratz
Area Archeologist

11-19-89
Date

Yes ✓ No
Assistant

John J. Leonard
Area Director

1/24/89
Date

Concurred:

Yes No ✓

FOR:

S.H.P.O. Officer

2-8-89
Date

Comments: This report does not include any lands in New Mexico.

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FEB 16 1989

BAHAW
ARCHAEOLOGY

CULTURAL RESOURCES COMPLIANCE FORM
DOI BUREAU OF INDIAN AFFAIRS
NAVAJO AREA OFFICE
P.O. BOX M
WINDOW ROCK, ARIZONA 86515

FILED
RECEIVED
MAR 1 1989

ROUTING: **COPIES TO**
✓AZ/UT **S.H.P.O**
X **NAVAJO NATION HISTORIC**
PRESERVATION OFFICE
X **NAVAJO NATION ARCHEOLOGY**
DEPARTMENT
WNA/NNA **AGENCY**
X **REAL PROPERTY MGMT/330**

NAO PROJECT NO. NTM-88-386
OTHER PROJECT NO.:
NNAD-88-286

ENVIRONMENTAL DATA:
See report

PROJECT TITLE: An Archaeological Survey for the Proposed Salt Lake City South Microwave System on the Navajo Reservation, Utah and Arizona

LAND STATUS: Tribal Trust
FORM PREPARED BY: James Copeland
PROJECT ARCHEOLOGISTS: Kristin Langenfield

SPONSOR: J. F. Sato and Associates, 1667 Cole Blvd., Suite 285, Golden, Colorado 80401

DATE INSPECTED: 8/22-26/88
DATE OF REPORT: 10/25/88
TOTAL ACREAGE INSPECTED: 32.56 Acres (13.19 ha)
METHOD OF INVESTIGATION: Class III parallel pedestrian transects spaced ca. 10 m apart.

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FEDERAL ANTIQUITIES PERMIT NO.: None

NAVAJO TRIBAL ANTIQUITIES PERMIT NO.: None

EFFECT/CONDITIONS OF COMPLIANCE: Follow report recommendation Option 1 or 2 at Teec Nos Pos Location. Follow report Option A or B at the Moenkopi location. If Option B is chosen, a research design must be prepared and submitted to this office prior to any

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MAR 13 1989

BIA BUREAU OF INDIAN AFFAIRS
ARCHEOLOGY

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FEB 14 1989

ARIZONA STATE
PARKS BOARD

fieldwork. No conditions for Lolami Point, Preston Mesa, or Mexican Hat locations. The undertaking shall be confined to areas investigated by this report. In the event of a discovery, cease operations and notify the NAO Area Archeologist at (602) 871-5151, extension 5128.

Notification to
Proceed Approved:
Conditions

Yes ☒ No ☐

Yes ☒ No ☐

[Signature]
Kathleen E. Gritz
Area Archeologist

JAN 18 1989

Date

Yes ☒ No ☐

Yes ☒ No ☐
Assistant

T. R. TIPPECONNIC
Area Director

JAN 24 1989

Date

Concurred:

Yes ☒ No ☐

Yes ☒ No ☐

FOR:
S.H.P.O. Officer

3/8/89

Date

cc: subject chrono 100/300 305:JCOPELAND:jl:1/4/88:NTM/88/386:
88AC21:final:jl:1/18/88

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FILE COPY
SUBMIT

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CULTURAL RESOURCES COMPLIANCE FORM
DOI BUREAU OF INDIAN AFFAIRS
NAVAJO AREA OFFICE
P.O. BOX M
WINDOW ROCK, ARIZONA 86515

ROUTING: COPIES TO
AZ/UT S.H.P.O
X NAVAJO NATION HISTORIC
PRESERVATION OFFICE
X NAVAJO NATION ARCHEOLOGY
DEPARTMENT
WNA/WNA AGENCY
X REAL PROPERTY MGMT/330

NAO PROJECT NO. NTM-88-386
OTHER PROJECT NO.:
NNAD-88-286

ENVIRONMENTAL DATA:
See report

PROJECT TITLE: An Archaeological Survey for the Proposed Salt Lake City South Microwave System on the Navajo Reservation, Utah and Arizona

LAND STATUS: Tribal Trust
FORM PREPARED BY: James Copeland
PROJECT ARCHEOLOGISTS: Kristin Langenfield

SPONSOR: J. F. Sato and Associates, 1667 Cole Blvd., Suite 285, Golden, Colorado 80401

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DATE OF REPORT: 10/25/88
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FEDERAL ANTIQUITIES PERMIT NO.: None

NAVAJO TRIBAL ANTIQUITIES PERMIT NO.: None

EFFECT/CONDITIONS OF COMPLIANCE: Follow report recommendation Option 1 or 2 at Teec Nos Pos Location. Follow report Option A or B at the Moenkopi location. If Option B is chosen, a research design must be prepared and submitted to this office prior to any

fieldwork. No conditions for Lolami Point, Preston Mesa, or Mexican Hat locations. The undertaking shall be confined to areas investigated by this report. In the event of a discovery, cease operations and notify the NAO Area Archeologist at (602) 871-5151, extension 5128.

Notification to
Proceed Approved:
Conditions

Yes ☒ No ☐

Yes ☒ No ☐

Yes ☒ No ☐

No ☐
Assistant

[Signature]
Kathleen E. Gatz
Area Archeologist

JAN 16 1989

Date

T. R. TIPPECONNIC
Area Director

JAN 24 1989

Date

Concurred:

Yes ☒ No ☐

FOR:

S.H.P.O. Officer

[Signature]
2/13/89
Date

cc: subject chrono 100/300 305:JCOPELAND:jl:1/4/88:NTM/88/386:
88AC21:final:jl:1/18/88

REC'D

FEB 27 1989

SMITHSONIAN
ARCHAEOLOGY

INVENTORY STANDARDS AND ACCOUNTING

(Reference: FSM 2361)

1. REPORT NUMBER:				2. REPORT DATE:			3. ROUTING: Copies to	
YEAR	FOREST	NUMBER	SERIES	MONTH	DAY	YEAR	☒ District	☒ SHPO 7/7/88
19	88	09	059	06	22	1988	☒ RO	☐ 2360
							☐ SO:	
							☐ Other:	

4. AUTHOR:

A. MCCORMICK

K. S.

B.

5. PROJECT NAME/REPORT TITLE (Abbreviate if necessary):

WESTERN POWER ELECTRONIC SITE, N. 1.

MINGUS

6. ABSTRACT/SUMMARY of report and findings:

Western Power Administration has proposed an electronic site at the north electronic site on Mingus Mtn., Verde Ranger District. The project will entail clearing timber and digging holes for the construction of a building and tower. The area to be impacted, 1 acre, was surveyed with no cultural resources being observed. Archaeological clearance is recommended.

☐ cont. p. 2.

7. CONSULTATION/CLEARANCE

- A. CONDITIONS OF CLEARANCE: ☒ NONE (No potentially eligible sites in project area)
☐ AVOID sites specified below ☐ MONITOR sites specified below
☐ REPORT new sites to Forest Archeologist ☐ OTHER/ADDITIONAL COMMENTS:

☐ cont. p. 2.

- B. ADDITIONAL FIELDWORK REQUIRED: ☐ EVALUATE sites specified below ☐ Other:

C. REPORT ACCEPTED:

☒ YES ☐ NO

D. CLEARANCE RECOMMENDED:

☒ YES ☐ NO ☐ N/A

James M. McNeil 07/05/88
 FOREST ARCHEOLOGIST DATE

E. EFFECT ON CULTURAL RESOURCES:

☐ No Effect ☐ No Adverse ☐ Adverse ☒ N/A ☐ Beneficial

F. TRANSMITTAL TO SHPO: Consultation on:

☐ Effect ☐ Eligibility ☒ Info Only

[Signature] 7/5/88
 FOREST SUPERVISOR DATE

G. SHPO CONCURRENCE: ☒ YES ☐ YES, per comment below ☐ NOComments: ☐ Additional comments attached

[Signature] 7/27/88
 SHPO DATE

H. CLEARANCE APPROVED: ☒ YES ☐ NO

[Signature] 7/6/88
 FOREST SUPERVISOR DATE

8. RANGER DISTRICT: 05

9. PROJECT FUNCTION: 27

10. PRIMARY ACTIVITY TYPE: A

11. SECONDARY ACTIVITY TYPE: G

12. PROGRAMMING: U

13. TOTAL PROJECT ACREAGE: 1

14. ACREAGE COMPLETELY SURVEYED: 1 15. SAMPLE: %

16. ACREAGE RESURVEYED: 1

17. TOTAL NUMBER OF SITES IN PROJECT AREA: 1 18. NEW SITES: 0

19. SITES EVALUATED ELIGIBLE: 1 20. SITES EVALUATED NOT ELIGIBLE: 0

(By Professional CRM Specialist, Request SHPO Concurrence)

21. SITES INSPECTED, MONITORED, ENHANCED, ETC.: 0
(Projects other than survey, evaluation)

22. RECOMMENDED DETERMINATION OF EFFECT: 6 (Initial: R.M.R.)

(By USFS Professional CRM Specialist)

1. No Effect
2. No Adverse Effect
3. Adverse Effect
4. Not Applicable: Not An "Undertaking"
5. Beneficial Effect
6. Not Applicable: No Cultural Resources Present

23. PROJECT LOCATION (Surveys only):

T. 15N R. 2E Sec. 2

T. R. Sec.

T. R. Sec.

T. R. Sec.

24. INSTITUTION CONDUCTING PROJECT/SURVEY:

F.P. USDA Prescott Nat. Forest
Name of Institution

25. AVERAGE NUMBER OF INDIVIDUALS USED: 1

26. AVERAGE INDIVIDUAL TRANSECT SPACING: 10 (Feet)

27. FIELD HOURS: 1

28. LAB/LIB HOURS: 9

29. TRAVEL HOURS: 2

30. ADMIN. HOURS: 3
(RD: 2 SO: 1)

31. MILEAGE: 18.0

32. PER DIEM RATE: W

33. DAYS OF PER DIEM: 10

34. COST WEIGHT FACTOR: 5

35. COST (CODE): A

or

36. ACTUAL COST: 11111

37. REMARKS/CONTINUATION from page 1:

USDA FOREST SERVICE

CULTURAL RESOURCE INVENTORY REPORT

Part A - GENERAL INFORMATION

1. Project Title and Report Number: WESTERN POWER ELECTRONIC SITE 'N'- MINGUS
2. Author and Report Date: KARL MCCORMICK 6-28-88
REPORT NO. 1988-09-059
3. Abstract: WESTERN POWER ADMINISTRATION HAS PROPOSED AN ELECTRONIC SITE AT THE NORTH ELECTRONIC SITE ON MINGUS MOUNTAIN. TREES WILL BE CLEARED AND HOLES DUG FOR A BUILDING AND TOWER FOUNDATIONS. GRAVEL WILL BE HAULED IN ON THE ROADS AND ACROSS THE ELECTRONIC SITE AREA. NO CULTURAL RESOURCES WERE OBSERVED.
4. Administrative Data: State ARIZONA-04, County YAVAPAI-025,
Region 03, Forest PRESCOTT-09, District VERDE-05.
5. Location or Legal Description: NORTH ELECTRONIC SITE, MINGUS MOUNTAIN
BLOCK G, LOTS 1,2,3&4 T 15 N - R 2 E - SE1\4, SE1\4, SE1\4 SEC. 2
6. Area Involved: 1 ACRE Total Project Acreage 1
Miles of New Road Construction 100 FT. Miles of Road Reconstruction 100 FT.
Number of Parcels/Units _____ Acres Actually Impacted 1
7. Maps Used(including topographic and general forest maps):
USGS TOPOGRAPHICAL MAP, COTTONWOOD QUADRANGLE 1:24000
8. Aerial Photographs Used: NONE
9. Description of the Proposed Undertaking: Target Date: 8-88
(Describe direct and indirect impacts expected.)
THE TIMBER ON THE SITE WILL BE REMOVED AND HOLES WILL BE DUG FOR THE BUILDING AND TOWER FOUNDATIONS. GRAVEL WILL BE HAULED IN ON THE ROAD AND ACROSS THE ELECTRONIC SITE AREA.
10. General Environmental Description:
THE PROJECT AREA IS ABOVE THE PINE TRANSITION LINE AT 7800 FT. AND COVERED BY A PONDEROSA PINE FOREST. THE SOILS ARE A CLAY TYPE.
BASALT BOULDERS ARE ALSO FOUND IN THE AREA. PINE DUFF IS SCATERED THROUGHOUT THE PROJECT AREA.
11. Previous Archeological/Historical Studies: NONE
12. Expected Areas of Cultural Sensitivity (cite previous studies whenever possible): NONE

DISCLOSURE OF
SITE LOCATIONS
IS PROHIBITED
(36 CFR 296.18)

PART B - FIELD EXAMINATION

1. Summary of Areas Involved: Percent of Impact Acreage Covered 100
Number of Units Surveyed N/A Total Acres Surveyed 1
2. Type of Coverage (key to map): THE PROJECT AREA WAS SURVEYED BY WALKING N-S TRANSECTS WITH A 10 FOOT DISTANCE BETWEEN TRANSECTS.
3. Personnel Conducting or Assisting in the Survey:
KARL MCCORMICK PARA-ARCHEOLOGIST
4. Date of Survey: 6-20-88
5. Special Problems Encountered: SCATTERED PINE DUFF OCASSIONALLY MADE SURFACE VISIBILITY LESS THAN 100%.

PART C - RESULTS

1. Background Sources Checked: (-) Indicates Results Negative (+) Indicates Relevant Cultural Information was found (include a short explanation)

- a. Federal Register (-)
- b. G.L.O. Plats and Topographic Maps (-)
- c. Land Status Maps (-)
- d. Mineral Plats (-)
- e. Project/Site Atlas (-)
- f. Historic Maps (-)

2. Cultural Resources Recorded (key to maps):

<u>Field No.</u>	<u>Site No.</u>	<u>Type of Site</u>
------------------	-----------------	---------------------

NONE

3. Describe Cultural Resources Noted But Not Formally Recorded(key to maps):

NONE

4. Comments/Conclusions (National Register eligibility, possible impacts, Avoidance of impacts, Relation of sites to project; use continuation sheets if needed):

NO CULTURAL RESOURCES WILL BE IMPACTED BY THIS PROJECT.

DISCLOSURE OF
SITE LOCATIONS
IS PROHIBITED
(36 CFR 296.18)

Legend

Cottonwood Quadrangle

T15N R2E Sec. 2

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Black

THE NAVAJO NATION

PETER MacDONALD, CHAIRMAN
THE NAVAJO TRIBAL COUNCIL
JOHNNY R. THOMPSON, VICE CHAIRMAN
THE NAVAJO TRIBAL COUNCIL

15 June 1988

John M. Bridges, Environmental Specialist/Biologist
J.F. Sato and Associates
Consulting Engineers/Project Managers & Planners
1667 Cole Blvd., Suite 285
Golden, CO. 80401

Mr. Bridges;

In response to your 23 May 1988 request for information concerning the potential occurrence of threatened or endangered (T&E) species at five sites on the Navajo Nation proposed for microwave facility installation, our office has prepared the following.

Cameron site

No known recent occurrences of T&E species in immediate area. Potential peregrine falcon (Falco peregrinus) habitat occurs approximately 10 kilometers west of the proposed site. Project lies outside suggested buffer zone for disturbance to nesting falcons. However, occurrence of peregrine falcon in the area warrants inclusion of appropriate raptor protection measures. Bald eagles (Haliaeetus leucocephalus) may use the Little Colorado River as a migration corridor. Proposed project lies on the edge of the black-footed ferret's (Mustela nigripes) historic range. Because black-footed ferrets almost exclusively occur in association with prairie dogs (Cynomys spp), presence of a prairie dog town greater than 10 acres or a complex of towns greater than 250 acres within a 4.5 mile radius of the project is grounds for a survey ("Black-footed Ferret Survey Guidelines for the Navajo Indian Reservation" available upon request). Potential habitat for Fickeisen plains cactus (Pediocactus peeblesianus var. fickeiseniae) occurs within approximately 15-20 kilometers of the Little Colorado River in this area. Fickeisen plains cactus is federally listed as Category 1 (proposed for listing as threatened or endangered).

Teec Nos Pos site

Occurs within 10 km of acceptable to marginal peregrine falcon habitat. Precautions similar to the Cameron site should be considered. Proposed site is close to known range of mesa verde cactus (Sclerocactus mesae-verdae). A survey for this species should be conducted contingent on the presence of suitable habitat. Mesa verde cactus usually occurs on dry clay soils derived from Mancos, Fruitland or Menefee Shale Formations at 1600-2000 meters elevation with annual precipitation varying from 8-20 cm.

Mexican Hat site

Occurs within peregrine falcon habitat classified as marginal. All cliff faces within two (2) miles of site should be surveyed for the peregrine falcon during breeding season (March-July). Construction should not take place within two (2) miles of occupied nest sites during breeding season. Appropriate raptor protection measures should be considered. The San Juan River is known wintering habitat for the bald eagle. Possibility exists for summer residents as well. Surveys, raptor protection measures and restrictions on construction time contingent on presence of the eagle are also recommended. Resident bighorn sheep (Ovis canadensis) occur in this area. Although not threatened or endangered our office is very concerned about potential negative impacts to the habitat of this species.

Marsh Pass site

Occurs on the edge of both historic habitat and habitat classified as acceptable for the peregrine falcon. All cliff faces within two (2) miles of site should be surveyed for the peregrine falcon during breeding season (March-July). Construction should not take place within two (2) miles of occupied nest sites during breeding season. Appropriate raptor protection measures should be considered. The historic range is considered very important in peregrine falcon management. Depending on the exact location of the proposed site, our office may recommend choosing an alternate site at least two (2) miles from the edge of this historic habitat.

Preston Mesa site

Occurs within peregrine falcon habitat classified as marginal to unsuitable. All cliff faces within two (2) miles of site should be surveyed for the peregrine falcon during breeding season (March-July). Construction should not take place within two (2) miles of occupied nest sites during breeding season. Appropriate raptor protection measures should be considered.

All of the proposed sites occur within the historic range of the black-footed ferret. Judging from the locations of these sites the occurrence of this highly endangered species appears unlikely. However, the presence of suitable habitat, as per "Cameron site" discussion, is justification for a survey.

Please find the enclosed permit application. All biological investigation work on the Navajo Nation must be permitted through our office. Permits are not issued to groups or organizations. Each principal investigator must be permitted; subpermittees are allowed, provided they work under the supervision of the permittee. Along with the application please submit a resume, a study plan including locations of study, and desired duration of permit (not to exceed the end of the year).

I hope this information will be of much use to you. If you have any questions please contact me at (602)871-5338.

Sincerely,

A handwritten signature in black ink, appearing to read 'John Nystedt', written over a horizontal line.

John Nystedt, Wildlife Biologist
Navajo Fish & Wildlife

CONCURRENCE

A handwritten signature in black ink, appearing to read 'Larry Benallie, Sr.', written over a horizontal line.
Larry Benallie, Sr., Director
Navajo Fish & Wildlife

cc: Louise Linkin, Director, Navajo EPC

THE NAVAJO NATION

PETER MacDONALD, CHAIRMAN
THE NAVAJO TRIBAL COUNCIL
JOHNNY R. THOMPSON, VICE CHAIRMAN
THE NAVAJO TRIBAL COUNCIL

Navajo Fish & Wildlife
 P.O. Box 1480
 Window Rock, AZ 86515
 01 October 1988

Lloyd Greiner, Area Manager
 Salt Lake City Area Office
 Western Area Power Administration
 P.O. Box 11606
 Salt Lake City, UT 84147

Mr. Greiner;

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Through communications with Mr. John M. Bridges of J. F. Sato and Associates we have learned of your proposal to install a microwave communication facility on Raplee Ridge, east of Mexican Hat, Utah. Our office is very concerned about potential negative impacts such a development might incur on a population of desert bighorn sheep known to inhabit that area, and are interested in seeing alternate sites seriously considered for this project.

Although desert bighorn sheep once ranged over the rugged terrain of the San Juan River Basin on the Navajo Nation, documented sightings have, up until recently, been rare. However, there are native desert bighorn populations along the north side of the San Juan River off the Navajo, under the state of Utah's jurisdiction. It appears that animals from these populations are expanding their range, moving to the south side of the river onto Navajo lands.

Observation records indicate that though bighorn numbers on the south side of the river are relatively low, the highest concentration is in the Raplee Ridge area, the vicinity where the proposed microwave site is located. This group of sheep may represent part of a "founder" population which could eventually lead to a well established and healthy resident population. This would be significant and important to the Navajo Nation for two reasons.

First, it would mean the reestablishment of a species close to extirpation on the reservation. This represents an increase in the natural diversity of the San Juan region and somewhat of a return to the natural order of the area before heavy impacts by man. The bighorn sheep also has cultural significance to the Navajo people. Medicine men use the skin and horns for ceremonial and religious purposes. As a tribal wildlife agency concerned with the preservation of natural and cultural diversity we are very interested in seeing the natural return of this species to Navajo lands.

Second, the establishment of a healthy, viable population under proper management opens the potential for regulated harvest which would be very lucrative for the Navajo Nation. The bighorn is a highly prized game species. Hunters are often willing to pay thousands of dollars for a single permit. The

Hualapai Tribe, for example, has implemented a successful bighorn sheep program, generating considerable revenue from permit sales. Last season, with an estimated bighorn sheep population of about 275 individuals, six permits were auctioned, each selling for between \$18,000 and \$18,600.

In addition to temporary impacts on the sheep due to human disturbance during the initial construction, installation and subsequent periodic maintenance visits, development of the proposed access road would open the area to long term unrestricted impacts and exploitation. Because these impacts may be detrimental to the bighorn sheep population, resulting in loss of both revenue and natural diversity, we strongly recommend serious investigation and consideration of alternate sites.

If you have any questions please contact us at (602) 871-5338.

Sincerely,

Larry Benallie Jr.
Larry Benallie, Sr.
Director

C O N C U R R E N C E

Ninibah M. Cahn
Ninibah M. Cahn, Executive Director
Division of Natural Resources

ROSE MOFFORD, Governor

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JAMES W. WERNER, Tucson
THOMAS O. WOODS, JR., Phoenix
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BRIDON K. WHITING, Mandyke

Director
EMPLE A. REYNOLDS

Agency Director
JANE L. SHROUFE

ARIZONA GAME & FISH DEPARTMENT

2222 West Greenway Road Phoenix, Arizona 85023 942-3000

August 17, 1988

Mr. John M. Bridges
Environmental Planner/Biologist
J.F. Sato and Associates
Consulting Engineers
1667 Cole Blvd., Suite 285
Golden, Colorado 80401

Dear Mr. Bridges:

In response to your letter dated July 19, 1988 requesting comments about five of Western Power Administration's microwave tower sites in northern Arizona, the following information is provided.

Only one of these sites is on public lands, the other four are on Navajo and/or Hopi Lands. Our Department does not have jurisdiction over wildlife on Tribal lands, but we can provide some information on the special status species that have been documented on these lands.

Mingus Mountain

No documented occurrences of special status species have been recorded, and we do not anticipate that any significant adverse impacts to game species will result from the development of this site.

Moenkopi

Fickeisen Navajo cactus (Pediocactus peeblesianus fickeiseniae) is a U.S. Fish and Wildlife Service (USFWS) Category 1 species. The Coconino pocket mouse (Perognathus amplus amodytes), the Peebles blue star (Amsonia peeblesii), and the Welsh caterpillar weed (Phacelia welshii), are all USFWS Category 2 species.

Preston Mesa

Our Department has no mapped information for this quadrant, as there is no quadrant map available

August 17, 1988

Lolamai

Both the Navaho Mountain Mexican vole (Microtus mexicanus navaho) and the Southern spotted owl (Strix occidentalis) are USFWS Category 2 and Arizona Threatened Native Wildlife (TNW) Threatened species, and the Northern goshawk (Accipiter gentilis) is a Candidate species on the TNW list.

Teec Nos Pos

The black-billed magpie (Pica pica) is a Candidate species on the TNW list.

Thank you for the opportunity to comment on these proposed sites.

Sincerely,

A handwritten signature in dark ink, appearing to read "Robert K. Weaver", with a stylized flourish at the end.

Robert K. Weaver
Habitat Evaluation Coordinator
Planning and Evaluation Branch

RKW:slc

cc: Bruce Palmer, Habitat Specialist, Nongame

ARIZONA STATE PARKS

800 W. WASHINGTON
SUITE 415
PHOENIX, ARIZONA 85007
TELEPHONE 802-255-4174

EVAN MECHAM
GOVERNOR

STATE PARKS BOARD MEMBERS

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M. JEAN HASSELL
STATE LAND COMMISSIONER

KENNETH E. TRAVOUS
EXECUTIVE DIRECTOR

COURTLAND NELSON
DEPUTY DIRECTOR

December 16, 1987

Lloyd Greiner, Area Manager
DOE Western Area Power Administration
Salt Lake City Area Office
P.O. Box 11606
Salt Lake City, Utah 84147

RE: Northeastern Arizona, South Microwave System, DOE-WAPA 1007

Dear Mr. Greiner:

I have reviewed the documentation submitted on this proposed project and have the following comments:

1. Based on a check of our cultural resource files and on professional judgment, the likelihood appears fairly good that cultural resources may be located within the five project areas in northeastern Arizona (Teec Nos Pos, Lolamai Point, Preston Mesa, Moenkopi Substation, and Mingus Mountain).
2. Therefore, pursuant to 36 CFR 800.4 of the Advisory Council's regulations ("Protection of Historic and Cultural Properties"), it is my recommendation that each of the project areas be surveyed by a qualified archaeologist to locate and evaluate any existing cultural remains. The surveys should include areas proposed for buildings and propane tanks, excavations of footings for microwave towers, access roads, and construction of powerlines. Enclosed is a list of consulting archaeologists who could do the survey.
3. Once the surveys have been completed, a copy of the report by the archaeologist should be sent to this office for review and comment.

Your continued cooperation with this office in meeting the historic preservation requirements for Federal projects is appreciated. If you have any questions, please contact me.

Sincerely,

Robert E. Gasser
Archaeologist & Compliance Coordinator

for Shereen Lerner, Ph.D.
State Historic Preservation Officer

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HISRC

Division of State History
(Utah State Historical Society)
Department of Community and Economic Development

Norman H. Bangertter

Max J. Evans

Director

300 Rio Grande
Salt Lake City, Utah 84101-1162

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January 21, 1988

Lloyd Greiner
Area Manager
Department of Energy
Western Area Power Administration
Salt Lake City Area Office
P. O. Box 11606
Salt Lake City, Utah 84147

RE: Mexican Hat Microwave Transmission Tower

In Reply Please Refer to Case No. K666

Dear Mr. Greiner:

The Utah State Historic Preservation Office has received for consideration the above referenced project. Following a review by our staff, we find that there have been no known cultural resource surveys within the proposed project area. There are also no known cultural resources that have been previously located. The potential for locating cultural resources eligible for the National Register of Historic Places within the project area, however, is high. The Department of Energy can use this information in making any further recommendations concerning the project.

The above is provided on request as outlined by 36 CFR 800 or Utah Code, Title 63-18-37. If you have questions or need additional assistance, please contact David Schirer at (801) 533-7039, or 533-6017.

Sincerely,

A. Kent Powell

A. Kent Powell
Deputy State Historic
Preservation Officer

DLS:jrc:K666/5048V OFR

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

December 8, 1987

Lloyd Greiner
Area Manager
Department of Energy
P. O. Box 11606
Salt Lake City, UT 84147

RE: Sand Rock and Cow Point Microwave Sites

Dear Mr. Greiner:

This office has been in contact with Kristie Arrington of the Bureau of Land Management concerning the above two microwave sites. It is our understanding that the two areas have been surveyed for cultural resources and that the Sand Rock site is located on an archaeological resource.

Ms. Arrington is working with the Department of Energy to resolve the cultural resource conflicts. It is our request that Ms. Arrington coordinate the compliance process between our offices since the BLM is the land managing agency and will make the final decisions concerning the resources.

If we can be of further assistance please contact Jim Green at 866-4674.

Sincerely,

Barbara Sudler

Barbara Sudler
State Historic Preservation Officer
BS/WJG:jc

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APPENDIX C

Ms. Barbara Sudler
 State Historic Preservation Officer
 Colorado Historical Society
 1300 Broadway
 Denver, Colorado 80203

RECEIVED
 Bureau of Land Management

FEB 1 1988

Durango, Colorado

Dear Ms. Sudler:

PART I. Project Description/Inventory Results

The following undertaking, located in T 38N, R 19W, Section(s) 4, has been proposed by Empire Electric. The undertaking, includes (describe type, scope, schedule, acreage, methods of undertaking): construction of a single phase powerline over about 3150' of BLM land and construction of a microwave towersite measuring about 150' X 150'.

A search of BLM site files reveals the following concerning cultural resources in the area described above:

(Check as many boxes as appropriate.)

- ☐ No adequate inventory has been conducted in the (above described) project area.
- ☒ The following inventories have been conducted in the project area: SJ 7926: Cross Canyon Wood Sale, Arrington, 1979. Inventory includes 220 acres.
- ☒ No cultural resources are known in the project area.
- ☐ The following cultural resources are located in the project area: _____
- ☒ No sites on/eligible to the National Register of Historic Places are present in the project area.
- ☐ The following sites have been determined to be on an eligible to the National Register: _____
- ☐ Further inventory will be conducted in the project area (specify area): _____
- ☒ Further inventory is not necessary for the following areas(s): The area encompassing and including the project area has been inventoried at a Class III level and no sites were found within the project area
- If private land, check here. Landowner consent has has not been given.

PART II. Determination of Eligibility

The following cultural resources have been evaluated against the Criteria listed in 36 CFR Part 60.6 (.a-.d). Please indicate below your concurrence/nonconcurrence with BLM's findings:

OVER

SITE #	Criteria				SHPO Opinion	
	NONE	.a	.b	.c	.d	CONCUR DO NOT CONCUR

PART III. Determination of Effect

Pursuant to 36 CFR Part 800.8 and 800.9, the criteria of effect has been applied to the above sites with the following results. Please indicate your concurrence/nonconcurrence with BLM's findings:

- X We have determined that the proposed project will have "no effect" on any listed or eligible cultural resources. We will retain documentation and proceed with the project if you do not respond within 10 days because the site(s) meet(s) the exclusions or because the site will be avoided. The attached map shows the proposed project in relationship to the Class III survey. A monitor will be required on the project.
- We have determined that the proposed project will have "no adverse effect" on any listed or eligible cultural resources. We will retain documentation of this determination and proceed with the project if you do not respond within 10 days.
- We have determined that the proposed project will have an "adverse effect" on or eligible properties. A description of each affected resource, and a mitigation plan are enclosed. Please advise us of your opinion within 15 days so that we may proceed with the development of a preliminary case report.

Tall. Wier
BLM Authorized Officer
1/22/88
Date

PART IV. SHPO Concurrence/Signature

I hereby X concur ___ do not concur, with the above findings of BLM.

Dep. Leslie S. Wilder
State Historic Preservation Officer
1/28/88
Date

Please return to the San Juan Resource Area.

- Enclosures (Required)
1. Map of proposed undertaking (7.5 Min. Quad)
 2. Site forms and statement of site significance
 3. Mitigation Plan
 4. Copy of letter of private landowner's refusal

FEDERAL BUILDING
701 CALIFORNIA STREET
DURANGO, COLORADO 81301

RUIN CANYON 7.5'
T. 38 N. R. 19 W.
40' CONTOUR LEVELS

Class III Inventoried Area (Cross Canyon Wood Sale - 1979)
Project Area

8143

C 46528

APPENDIX C

CERTIFIED MAIL #
RETURN RECEIPT REQUEST

RECEIVED
Bureau of Land Management

SEP 23 1988

Durango, Colorado

Ms. Barbara Sudler
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, Colorado 80203

Dear Ms. Sudler:

PART I. Project DescriptionCounty San Miguel

The following undertaking is located in T 42N, R 18W, Section(s) 22.
Project Name: WAPA Sand Rock Comm Site. This undertaking includes (describe
type, scope, schedule, acreage, methods of undertaking): Construction of a
microwave tower pad site (200' X 200') and 600' of improved access road and
600' of a small power distribution line

Due to the above Federal undertaking (as determined by the Bureau of Land
Management) and _____, and pursuant to the Programmatic Agreement
(2/6/87), the BLM seeks your concurrence in the following action(s):
(Check as appropriate, below)

- ☐ Determination of Eligibility
☒ Determination of Effect
☐ Method of Treatment (if not avoided)

PART II. Determination of Eligibility to the National Register of
Historic Places. Section 106 Consultation.

The below listed cultural resources has/have been evaluated using the
eligibility criteria in 36 CFR Part 60. The Bureau of Land Management has
evaluated this/these site(s) as follows:

Site Number	Not Eligible	Need Data	Eligibility Criteria A,B,C,D	SHPO Opinion	
				Concur	Not Concur
5SM610		X	D	✓	
5SM1984		X		✓	

Narrative(s) discussing not eligible, need data and eligible cultural
resource(s) are attached.

OVER

85. 208

PART III. Determination of Effect

Pursuant to 36 CFR Part 800.5, the criteria of effect have been applied to the above sites with the following results. Please indicate your concurrence/nonconcurrence with BLM's findings:

x We have determined that the proposed project will have "no effect" on any listed or eligible historic properties. We will retain documentation and proceed with the project if you do not respond within 10 working days because the site(s) meet(s) the exclusions or because the site(s) will be avoided. See attached report.

 We have determined that the proposed project will have "no adverse effect" on any listed or eligible historic properties. We will retain documentation of this determination and proceed with the project if you do not respond within 10 working days.

 We have determined that the proposed project will have an "adverse effect" on or eligible properties. A description of each affected resource, and a mitigation plan are enclosed. Please advise us of your opinion within 10 working days so that we may proceed with the development of a preliminary case report.

J. L. W. J.
BLM Authorized Officer

2/2/88
Date

PART IV. SHPO Concurrence/Signature

✓ I hereby Concur with the above Bureau of Land Management findings.

 I do not concur with the above Bureau of Land Management findings. Please see the attached narrative.

Barbara Sudler
State Historic Preservation Officer

9-16-88
Date

The survey report has been deemed acceptable by the OAHP, 9/12/88.
Please return to the San Juan Resource Area.

FEDERAL BUILDING
701 CAMINO DEL RIO
DURANGO, COLORADO 81301

Enclosures (Required)

1. Map of proposed undertaking (7.5 Min. Quad)
2. Site forms and statement of site significance/or reason for site noneligibility
3. Mitigation Plan
4. Copy of letter of private landowner's refusal
5. Bibliographic references

STATE OF UTAH
NATURAL RESOURCES
Wildlife Resources

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
William H. Geer, Division Director

Utah Eastern Region • 455 West Railroad Avenue • Price, UT 84501-2829 • 801-637-3310

August 3, 1988

Mr. John M. Bridges
J.F. Sato and Associates
1667 Cole Blvd., Suite 285
Golden, CO 80401

Ref: Mexican Hat microwave tower site.

Dear Mr. Bridges:

In regards to Western Area Power Administration's proposed microwave tower site near Mexican Hat, the following is offered for your consideration.

We have recently identified a peregrine falcon aerie area (S 1/2 Sec. 26, T 41 S, R 19 E, San Juan County, Utah) nearby the project site. As you know, the peregrine is an endangered specie. The lack of detail on the location map you provided makes assessment of impacts to the aerie location difficult. However, the aerie and a 1/2 mile radius buffer zone should be protected from man's disturbance between February 1 and July 31.

Desert bighorn sheep are inhabitants of the project area. Parturition (lambing) activities of these animals must be protected from man's disturbance between April 15, and May 31. Also, sources of drinking water for the desert bighorn and other wildlife, as well as a 1/2 mile buffer zone needs to be protected. Construction camps should be disallowed from utilizing these critical valued resources. The period between June 1, and August 30, is especially crucial.

No other wildlife species having high interest are known to inhabit the project area. Thank you for an opportunity to provide comment on this project.

Sincerely,

Larry B. Dalton
Wildlife Programs Manager
Resource Analysis/Habitat Protection

LBD

cc: Darrell Nish, DWR
Bob McQue, USFWS
Larry Benallie, Navajo Nation

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF PARKS AND RECREATION

Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
Jerry A. Miller
Division Director

Edge of the Cedars State Park
660 West 400 North
P.O. Box 788
Blanding, Utah 84511-0788
801-678-2238

August 22, 1988

John M. Bridges
JF Sato and Associates
1667 Cole Blvd.
Suite 285
Golden, Colorado 80401

Dear Mr. Bridges:

RE: Environmental Impact Comments, Microwave Tower in
Southeast Utah

In response to your letter concerning a potential microwave tower east of Goosenecks State Park, and our telephone conversation, the following addresses my concerns:

Goosenecks State Park is a scenic park located at the end of State Highway 316 on the canyon rim of the San Juan River Canyon. My concern is with visual impact from the park.

If the actual proposed microwave tower site is not visible from the park, there is no concern for the tower. If the tower will be visible from the park, then it becomes a matter of degree. The questions that I have are: 1. how obvious will it be from the park? 2. If it is visible, will it be difficult to see from the park?

If the proposed tower is not visible/not obvious from the park, I believe that the tower will have little or no impact on the park and its visitors. If the tower is quite obvious, as Park Manager, I would recommend an alternate site which would not visually impact the park.

I am forwarding your letter to the Southeast Region Manager for his comment.

Respectfully,

Stephen J. Olsen
Park Manager

cc: Max Jensen, SE Region Office

APPENDIX C

WESTERN'S STANDARD MITIGATIVE PRACTICES

APPENDIX C

Standard Mitigation Measures

<u>Mitigation Number</u>	<u>Mitigation Measure</u>
1	The contractor shall limit the movement of its crews and equipment to the right-of-way (ROW), including access routes. The contractor shall limit movement on the ROW so as to minimize damage to grazing land, crops, or property and shall avoid marring the land.
2	When weather and ground conditions permit, the contractor shall obliterate all contractor-caused deep ruts that are hazardous to farming operations and to movement of equipment. Such ruts shall be leveled, filled, and graded, or otherwise eliminated in an approved manner. In hay meadows, alfalfa fields, pastures, and cultivated productive lands, ruts, scars, and compacted soils shall have the soil loosened and leveled by scarifying, harrowing, disking, or other approved methods. Damage to ditches, tile drains, terraces, roads, and other features of the land shall be corrected. Before final acceptance of the work in these agricultural areas, all ruts shall be obliterated, and all trails and areas that are hard-packed as a result of contractor operations shall be loosened, leveled, and reseeded. The land and facilities shall be restored as nearly as practicable to their original conditions.
3	Water bars or small terraces shall be constructed across all ROW and access roads on hillsides to prevent water erosion and to facilitate natural revegetation.
4	The contractor shall comply with all Federal, State, and local environmental laws, orders, and regulations. Prior to construction, all supervisory construction personnel will be instructed on the protection of cultural and ecological resources.
5	The contractor shall exercise care to preserve the natural landscape and shall conduct its construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent works, approved construction roads, or excavation operations, all trees, native shrubbery, and vegetation shall be preserved and shall be protected from damage by the

contractor's construction operations and equipment. The edges of clearings and cuts through tree, shrubbery or other vegetation shall be irregularly shaped to soften the undesirable visual impact of straight lines.

- 6 On completion of the work, all work areas except access roads shall be scarified or left in a condition which will facilitate natural revegetation, provide for proper drainage, and prevent erosion. All destruction, scarring, damage, or defacing of the landscape resulting from the contractor's operations shall be repaired by the contractor.
- 7 Construction staging areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On abandonment, all storage and construction buildings, including concrete footings and slabs, and all construction materials and debris shall be removed from the site. The area shall be regraded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.
- 8 Borrow pits shall be excavated so that water will not collect and stand therein. Before being abandoned, the sides of borrow pits shall be brought to stable slopes, with slope intersections shaped to carry the natural contour of adjacent undisturbed terrain into the pit or borrow area giving a natural appearance. Waste piles shall be shaped to provide a natural appearance.
- 9 Construction activities shall be performed by methods that will prevent entrance, or accidental spillage, of solid matter contaminants, debris, any other objectionable pollutants and wastes into streams, flowing or dry watercourses, lakes, and underground water sources. Such pollutants and waste include, but are not restricted to refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailing, mineral salts, and thermal pollution.
- 10 Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses shall be conducted in a manner to prevent muddy water and eroded materials from entering the streams or

watercourses by construction of intercepting ditches, bypass channels, barriers, settling ponds, or by other approved means.

- 11 Excavated material or other construction materials shall not be stockpiled or deposited near or on streambanks, lake shorelines, or other watercourse perimeters where they can be wasted away by high water or storm runoff or can in any way encroach upon the actual watercourse itself.
- 12 Waste waters from concrete batching, or other construction operations shall not enter streams, watercourses, or other surface waters without the use of such turbidity control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such waste waters discharged into surface waters shall be essentially free of settleable material. For the purpose of these specifications, settleable material as defined as that material which will settle from the water by gravity during a 1-hour quiescent detention period.
- 13 The contractor shall utilize such practicable methods and devices as are reasonably available to control, present, and otherwise minimize atmospheric emissions or discharges of air contaminants.
- 14 The emission of dust into the atmosphere will not be permitted during the manufacture, handling, and storage of concrete aggregate, and the contractor shall use such methods and equipment as necessary for the collection and disposal, or prevention, of dust during these operations. The contractor's methods of storing and handling cement and pozzolans shall also include means of eliminating atmospheric discharges of dust.
- 15 Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, shall not be operated until repairs or adjustments are made.
- 16 The contractor shall prevent any nuisance to persons or damage to crops, cultivated fields, and dwellings from dust originating from his operations. Oil and other petroleum

derivatives shall not be used for dust control. Speed limits shall be enforced, based on road conditions, to reduce dust problems.

- 17 To avoid nuisance conditions due to construction noise, all internal combustion engines used in connection with construction activity shall be fitted with an approved muffler and spark arrester.
- 18 Burning or burying waste materials on the ROW or at the construction site will be permitted if allowed by local regulations. The contractor shall remove all other waste materials from the construction area. All materials resulting from the contractor's clearing operations shall be removed from the right-of-way.
- 19 The contractor shall make all necessary provisions in conformance with safety requirements for maintaining the flow of public traffic and shall conduct its construction operations to offer the least possible obstruction and inconvenience to public traffic.
- 20 Western will apply necessary mitigation to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW, to the mutual satisfaction to the parties involved.
- 21 Structures will be carefully located to avoid sensitive vegetative conditions, including wetlands, where practical.
- 22 Rights-of-way will be located to avoid sensitive vegetation conditions including wetlands where practical, or, if they are linear, to cross them at the least sensitive feasible point.
- 23 Removal of vegetation will be minimized to avoid creating a swath along the ROW.
- 24 Topsoil will be removed, stockpiled, and respread at all heavily disturbed areas not needed for maintenance access.
- 25 All disturbed areas not needed for maintenance access will be reseeded.
- 26 Erosion control measures will be implemented on disturbed areas, including areas that must be used for maintenance operations (access ways and areas around structures).

- 27 The minimum area will be used for access ways (12 feet to 15 feet wide, except where roadless construction is used).
- 28 Structures will be located and designed to conform with the terrain. Leveling and benching of the structure sites will be the minimum necessary to allow structure assembly and erection.
- 29 Rights-of-way will be located to utilize the least steep terrain and, therefore, to disturb the smallest area feasible.
- 30 Careful structure location will ensure spanning of narrow flood prone areas.
- 31 Structures will not be sited on any potentially active faults.
- 32 Structure sites and other disturbed areas will be located at least 300 feet, where practical, from rivers, streams (including ephemeral streams), ponds, lakes, and reservoirs.
- 33 New access ways will be located at least 300 feet, where practical, from rivers, ponds, lakes, and reservoirs.
- 34 At crossings of perennial streams by new access ways, culverts of adequate size to accommodate the estimated peak flow of the stream will be installed. Construction areas will minimize disturbance of the stream banks and beds during construction. The mitigation measures listed for soil/vegetation resources will be performed on areas disturbed during culvert construction.
- 35 If the banks of ephemeral stream crossings are sufficiently high and steep that breaking them down for a crossing would cause excessive disturbance, culverts will be installed using the same measures as for culverts on perennial streams.
- 36 Blasting will not be allowed.
- 37 Powerline structures will be located, where practical, to span small occurrences of sensitive land uses, such as cultivated areas. Where practicable, construction access ways will be located to avoid sensitive conditions.

- 38 Rights-of-way will be purchased at fair market value and payment will be made of full value for crop damages or other property damage during construction or maintenance.
- 39 The powerline will be designed to minimize noise and other effects from energized conductors.
- 40 The precise location of all structure sites, rights-of-way, and other disturbed areas will be determined in cooperation with landowners or land management agencies.
- 41 Crossing of operating railroads by construction vehicles or equipment in a manner that would cause delays to railroad operations will be avoided. Construction will be coordinated with railroad operators. Conductors and overhead wire string operations would use guard structures to eliminate delays.
- 42 Before construction, Western will perform a Class III (100 percent of surface) cultural survey on all areas to be disturbed, including structure sites and new access ways. A product of the survey will be a Cultural Resources Report recording findings and suggesting mitigation measures. These findings will be reviewed with the State Historic Preservation Offices and other appropriate agencies, and specific mitigation measures necessary for each site or resource will be determined. Mitigation may include careful relocation of access ways, structure sites, and other disturbed areas to avoid cultural sites that should not be disturbed, or data recovery.
- 43 The contractor will be informed of the need to cease work in the location if cultural resource items are discovered.
- 44 Construction activities will be monitored or sites flagged to prevent inadvertent destruction of any cultural resource for which the agreed mitigation was avoidance.
- 45 Construction crews will be monitored to the extent possible to prevent vandalism or unauthorized removal or disturbance of cultural artifacts or materials from sites where the agreed mitigation was avoidance.
- 46 Should any cultural resources that were not discovered during the Class III Survey be encountered during construction, ground disturbance activities at that location

will be suspended until the provisions of the National Historic Preservation Act and enabling legislation have been carried out.

- 47 Construction activities will be monitored or significant locations flagged to prevent inadvertent destruction of any paleontological resource for which the agreed mitigation was avoidance.
- 48 Clearing for the access road will be limited to only those trees necessary to permit the passage of equipment.
- 49 The access road will follow the lay of the land rather than a straight line along the ROW where steep features would result in a higher disturbance.

APPENDIX D
CONSTRUCTION EQUIPMENT AND
ACTIVITY FOR THE
SOUTH MICROWAVE SYSTEM

APPENDIX D

<u>Activity</u>	<u>Personnel</u>	<u>Equipment</u>	
Foundations and Ground Mat (Each Site)	1-2 laborers, equipment operators	1 backhoe 1 pickup 1 compressor	5 days (Lags access roads 1 week)
Concrete placement (Each Site)	4-5 laborers 1 pickup 1 manhaul	1 mixer truck (lags foundation excavation 1 week)	3-5 days
Steel Haulout (Each Site)	3 laborers equipment operators	1 tractor-trailer w/articulating lift 1 small crane	1 day
Steel Assembly and Erection (Each Site)	2 assemblers 1 groundman, crane operator	1 small crane 1 crew vehicle 1 pickup 1 compressor	5 days
Building Placement (Each Site)	2 laborers 1 crane operator	1 large crane 1 pickup	1 day
Equipment and Antenna Placement (Each Site)	3 electronics technicians 2 linemen	1 small crane 1 pickup	10 days
Electrical Service and LP Gas Connection	2 laborers 1 equipment operator	2 pickups 1 backhoe	1-2 days
Cleanup (Each Site)	2 laborers	1 front-end loader 1 tractor/harrow/disk 1 light truck	1-2 days

APPENDIX E
BIOLOGICAL ASSESSMENT

**BIOLOGICAL ASSESSMENT
FOR THE
SOUTH MICROWAVE PROJECT**

This Biological Assessment has been prepared in accordance with Section 7(C) of the Endangered Species Act of 1973 (and Amendments), for Western Area Power Administration's (Western) South Microwave System. This project consists of eight microwave repeater sites in southeastern Colorado, southwestern Utah, and northern Arizona. Included in consideration of impacts are the access roads and distribution lines associated with the microwave facilities. Each site will consist of a single self-supporting tower, ranging in height from 40 to 100 feet. The sites will also have an equipment building and a propane tank which will require concrete foundations. Two of the sites will be enclosed with an eight foot tall fence.

The U.S. Department of Interior, Fish and Wildlife Service (FWS) has determined that three endangered species may be present on Cow Point, and Lolamai Point sites. The FWS reported the black-footed ferret (Mustela nigripes), may occur in the vicinity of the Cow Point site and the bald eagle (Haliaeetus leucocephalus) may winter there, and the peregrine falcon (Falco peregrinus) may occur near the Lolamai Point site. They also indicated that a Category 1 species, Pediocactus pueblesianus var. fickeinseniae, may be present on the Moenkopi site. In addition the FWS has reported that since the January 8, 1988 letter was written, peregrine falcons have begun nesting along the San Juan River near the Mexican Hat site. In response to those concerns, Western has prepared this report.

COW POINT

The Cow Point site in Montezuma County, Colorado, reportedly lies in historic habitat for the endangered black-footed ferret, which normally inhabits prairie dog towns. There was no evidence of prairie dogs (Cynomys sp.) within two miles of the site. This is based on an aerial survey of the site and its environs, conducted on June 6, 1988. The aerial survey was conducted in a Bell 206 Long Ranger helicopter from a height of 250 feet to 500 feet above ground level at a speed of 40 to 60 miles per hour. The site and its immediate surroundings is covered by big sagebrush, but at one time was dominated by pinyon-juniper vegetation prior to being burned. A more detailed description of the site and natural resources associated with it can be found in the Environmental Report.

The FWS also report that wintering bald eagles may occur in the vicinity of the Cow Point site. Because of the presence of suitable roost trees, the most obvious areas, in the immediate vicinity of the site, which may support wintering bald eagles are Cross Canyon, and possibly Cow Canyon, both of which are over one-half mile from the Cow Point site. There are no suitable roost trees closer to the site. In addition, consultation for the project was conducted with the Bureau of Land Management, Durango District (BLM) and the Colorado Division of Wildlife (CDW). Neither agency cited known incidence of bald eagle use or expressed concern for bald eagles in the vicinity of the proposed site (personal communications from Kathryn A. Bulinski, BLM, June 28, 1988 and Gary Skiba, CDW, August 10, 1988).

There are four ways in which the proposed action may impact wintering bald eagles:

- a. Loss of perching and/or roosting habitat: Meyer (1979) reports that in northern Idaho and Montana, essential perching habitat for wintering bald eagles lies from the shoreline to 15 to 30 meters inland. He states that removing any trees from this strip could adversely affect wintering eagles. As indicated above, the microwave site will be over one-half mile from any water courses and suitable roost trees. Therefore, there will be no loss of roosting or perching habitat as a result of this action.
- b. Disturbance of resident individuals: Stalmaster and Newman (1978) reported the behavior of wintering bald eagles in relation to human activity. They reported that eagles will abandon favorable areas, if disturbed. They also reported a tolerance zone of 300 meters for most individual birds. Again, the distances involved between the proposed action and the potential roosting areas indicate that the microwave facility will not disturb wintering bald eagles.

- c. **Electrocutions:** The potential for electrocution of large birds is very real on powerlines of the voltage level that will be used for the Cow Point site. To minimize the potential for electrocutions on the distribution line, Western will require that design of the distribution line incorporate the guidelines in REA Bulletin 61-10 and the Suggested Practices for Raptor Protection on Powerlines (Olendorff et al 1981).
- d. **Collisions:** Wintering bald eagles may fly a considerable distance from the roost to forage. There is a potential that bald eagles may collide with the distribution line and/or the microwave tower during those flights. Current state-of-the-art does not provide an adequate solution to this potential problem. However, the potential for collisions with the microwave tower are extremely remote due to the high visibility of the structure and the keen eyesight and highly manuverable flight of the species. If any collisions with structures associated with the project were to occur, it is unlikely that they would be numerous enough to have any affect on regional populations.

CONCLUSIONS

Western's proposed Cow Point microwave site would not adversely affect the endangered black-footed ferret because there is no habitat available for this species in the immediate vicinity of the site.

It is doubtful that wintering bald eagles use the area around the Cow Point site; however, if they were to occur in the area, they would not be adversely affected by construction, operation, and maintenance of the microwave facilities.

LOLAMAI POINT

According to the FWS, the Lolamai Point site, in Navajo County, Arizona, is in the historic range of the peregrine falcon. A June, 1988 aerial survey of this site and the cliff faces within two miles of it did not reveal any raptor nest sites. Subsequent ground surveys in August, 1988, showed some red-tailed hawk (Buteo jamaicensis) nesting activity had occurred near the Lolamai site, based on the presence of three juveniles (Navajo Nation Archeology Department 1988). However, there was no evidence of peregrine falcons in the area.

The peregrine falcon may be impacted in the same manner described for bald eagles above. One major difference is the impact zone of human activity tends to be much larger for peregrine falcons than it is for eagles.

CONCLUSION

No evidence of peregrine falcons was observed in the project area. In addition, once the proposed project is constructed, human activity associated with the site would be confined to routine and emergency maintenance, which would require only a few visits by one-to-three man crews each year. Therefore, construction, operation, and maintenance of the Lolamai Point microwave facility would not adversely affect the endangered peregrine falcon.

MOENKOPI

The FWS report that no listed endangered or threatened species occur on the Moenkopi site, however, a Category 1 species, Pediocactus peeblesianus var. fickeinseniae may occur in the area. This cactus is under consideration for listing as endangered or threatened and as such, should be incorporated in the planning of a proposed action. The Moenkopi site, the access road, and the distribution line was surveyed on foot in June and August, 1988. Prior to the August survey, Ms. Donna House, botanist consultant, in Sante Fe, New Mexico, was contacted. Ms. House provided information and photographs regarding the cactus, including a habitat description and some hints on surveying for the species. The surveys conducted found no cacti on any of the areas involved in the proposed action. A complete listing of the vegetation found on the site is provided in the Environmental Report.

CONCLUSION

Construction, operation, and maintenance of Western's proposed microwave repeater facility at the Moenkopi site will not effect any endangered, threatened, or sensitive species.

MEXICAN HAT

No endangered or threatened species were reported for the Mexican Hat site in San Juan County, Utah, in the FWS January 8, 1988 response to Western's request for information. However, it was reported by the Utah Division of Wildlife (Dalton, personal communication, 1988) that peregrine falcons had started nesting along the San Juan River in 1988. The reported location of the aerie is over two miles from Western's proposed Mexican Hat site.

The mode of impact to nesting peregrine falcons would be through disruption of their nesting activities due to human presence. Western plans to undertake construction and limit routine maintenance of the Mexican Hat site to the period between June 15 and October 15. There is also the potential for electrocutions on the distribution line which will supply power to the site. To minimize this impact, the design of the distribution line will incorporate guidelines in REA bulletin 61-10 and in the Suggested Practices for Raptor Protection on Powerlines (Olendorff et al 1981). There is a slight possibility that the falcons may collide with the distribution line. However, the closest point of the distribution line would be over two miles from the aerie. Therefore such collisions, should they occur, would not be expected to significantly effect populations of this endangered species.

CONCLUSION

Because of the distances involved between the aerie and the site, the lack of suitable feeding habitat around the site, the windows of no activity, and the raptor protection guidelines, peregrine falcons will not be adversely impacted by the construction, operation, and maintenance of the Mexican Hat microwave repeater site and its associated facilities.

END

DATE FILMED

01 / 29 / 91