# DESCRIPTION OF THE AFFECTED ENVIRONMENT

## INTRODUCTION

This section describes the existing environment that would be affected by the no action alternative and the action alternatives. Environmental features located along the project area are described in the following sections and are illustrated on the project resource maps in Appendix A. Specific features of the existing environment discussed are geologic resources, soil resources, air quality, noise, water resources, vegetation, wildlife, species of concern, cultural resources, land use and recreation, transportation, visual aesthetics, hazardous materials and safety, and socioeconomics and environmental justice. As discussed in the Impacts section, some of these resources (such as groundwater) will not be affected by the action alternatives. In such cases, the information provided in this section is for background purposes only.

References in the text to the "project area" refer only to those 220 miles identified in the project description and mapped on the project resource maps in Appendix A. References to the project area include the route of both the cable right of way and the parallel access corridor, unless otherwise noted. A summary of the existing environment and resources in the project area can be found in Tables 10 - 28.

## GEOLOGIC RESOURCES

### New Mexico

**Physiography and Geologic Setting.** The project area lies within the Datil-Mogollon section, a transition zone between the Colorado Plateau and the Basin and Range Province. This volcanic terrain is dominated by high tablelands, fault-block mountains, and broad structural basins, and the topography is characterized by extreme relief. The highlands and mountain ranges consist primarily of igneous rock, whereas the basins are composed mainly of coarse-grained alluvium, and terrace and sediment gravels (NMGS 1982).

The climate ranges from arid to semiarid, and annual precipitation ranges from 8 inches in the valleys to 18 inches on the mountain peaks (USDA 1988).

**Geologic Hazards.** The project area crosses no significant geologic faults or areas of recent volcanic activity along the New Mexico segment (NMGS 1982; USDA 1988).

**Mineral Resources.** The mountains east of the Rio Grande River in Socorro County had numerous deposits of base and precious metals that were mined in the late 1800s and early 1900s. The project area traverses plains and lowlands and crosses no known mineral resources. There are no obvious physical signs of mining activity on the right of way or the access corridor. Mining claim records for the right of way have not been examined, and it is possible, though unlikely, that valid mining claims may exist.

**Paleontological Resources.** Potentially fossiliferous sedimentary rock formations composed of recent unconsolidated sediments occur along the project area (NMGS 1982). While many geological formations have the potential to contain fossils, those containing vertebrate fossils (portions of

skeletons) tend to be most significant and, therefore, most susceptible to construction impact. Vertebrate fossils tend to be rare and fragmentary and, thus, have greater scientific importance than invertebrate and plant fossils, which are relatively more common (FERC/SLC 1995).

The substrate under the cable right of way and access corridor were previously disturbed by cable installation and by subsequent activities; therefore, any potential fossil resources directly on the right of way or the access corridor are likely to be in a highly disturbed state.

### Nevada/California

**Physiography and Geologic Setting.** The project area in Nevada/California is located within the Mojave Desert, which is dominated by broad alluvium-filled basins. Bedrock geology consists of a complex assemblage of Precambrian to Tertiary granitic, metamorphic, and volcanic rocks (FERC/SLC 1995). The western portion of the province is cut by active, right-lateral, strike-slip faults that are subparallel to the San Andreas Fault, and that appear to be truncated on the north by the Garlock Fault (Jennings 1994). The locations of these faults are listed in Table 10. Slopes traversed by the coaxial cable are generally gentle to moderate across alluvial fans and the margins of more mountainous areas with several small segments of steep slopes. Much of the project area crosses distal edges of alluvial fans, which are underlain by finer-grained granular materials.

**Geologic Hazards.** The geologic hazards that may exist in the project area include ground motion due to earthquakes, fault rupture and displacement, and slope instability and landsliding, and volcanic hazards. These geologic hazards are discussed below.

The Mojave Desert, in general has low susceptibility to landsliding primarily because of the lack of steep slopes, and no areas of significant subsidence have been identified. However, steep slopes can be locally present. The geologic hazards that could potentially occur along the project area through the Mojave Desert are:

Seismic hazards, active faults, ground shaking from earthquakes: These hazards can occur throughout the Mojave Desert because of its active seismicity. Peak ground accelerations greater than 0.4 g (the force exerted by gravity on a resting body) may occur in the vicinity of the faults listed in Table 10.

Soil liquefaction and hydrocompaction: These hazards are typically associated with higher water tables than those found along the project area. No areas of settlement or hydrocompaction that are crossed by the project area in the Mojave Desert have been identified.

Volcanic hazards: The project area passes to the south of the Cima volcanic field in eastern San Bernardino County. Volcanic cones in this field have erupted within the last 300 to 500 years (Norris and Webb 1990).

**Mineral Resources.** The Mojave Desert contains abundant mineral resources, including precious metals such as gold and silver; minerals such as rare earths or evaporites (borax); and non-metals such as oil and gas, as well as sand and gravel deposits. No known significant mineral resources are crossed by the project area (Norris and Webb 1990). There are no obvious physical signs of mining activity on the right of way or the access corridor. Mining claim records for the right of way have not been examined, and it is possible, though unlikely, that valid mining claims may exist. The access corridor is used in at least one area to reach an off-site mining area.

**Paleontological Resources.** Significant fossil deposits occur in the Mojave Desert. Potentially fossiliferous sedimentary rock formations composed of recent unconsolidated sediments occur along the project area. While many geological formations have the potential to contain fossils, those containing vertebrate fossils (portions of skeletons) tend to be most significant and, therefore, most susceptible to construction impact. Vertebrate fossils tend to be rare and fragmentary and, thus, have greater scientific importance than invertebrate and plant fossils, which are relatively more common (FERC/SLC 1995).

The substrate under the cable right of way and access corridor were previously disturbed by cable installation and by subsequent activities; therefore, any potential fossil resources directly on the right of way or the access corridor are likely to be in a highly disturbed state.

## SOIL RESOURCES

### New Mexico

The 7.7-mile project area traverses about 6 miles of dry soils and weathered lava flows in the east, followed by about 1.7 miles of moister soils and weathered rock outcrops in the west (New Mexico Geological Society 1982; USDA 1988). There are no prime farmland soils in Socorro County because of elevated salinity and alkalinity characteristics of the volcanic-derived soils and the arid to semiarid climate (USDA 1988).

### Nevada/California

The Mojave Desert is dominated by broad alluvial basins filled with continental deposits from surrounding uplands that are progressively burying the older topography. Throughout the desert, small hills rise above the alluvial valley fill. Soil characteristics, including texture and composition, are variable. Soils along the project area are generally broken into seven groups based on the characteristics most relevant to project construction activities and environmental restoration (FERC/SLC 1995). The soils in some areas may have more than one relevant characteristic. Rainfall varies from 2.5 to 6 inches annually (USDA 1981). Soils encountered in the project area include:

*Shallow soils where bedrock is close to the ground surface* generally occur on steep slopes, alluvial fans, and floodplains and often support rangeland and shallow-rooted crops.

*Soils with low inherent fertility* occur where organic matter is lacking.

*Unstable soils and soils on steep slopes* tend to erode and are prone to slumping or landslides. Clayey soils on slopes are typically unstable, especially during the rainy season.

*Soils with high to severe erosion potential* include soils on steep slopes; soils with rapid water runoff; soils associated with exposed rock; and sparsely vegetated, noncohesive soils easily transported by water.

*Soils prone to wind erosion* are generally dry, sandy soils with little vegetative cover and are common in the Mojave Desert.

*Soils where hardpan exists (usually caliche)* are found in the western portion of the Mojave Desert and may limit the development of topsoil.

*Soils with high salinity or sodicity* develop in arid regions where soluble salts concentrate in soils, and are found throughout the project area. Saline soils contain enough salts to adversely affect the growth of most crop plants. Sodic soils contain enough sodium to adversely affect the soil structure and growth of cultivated plants.

## AIR QUALITY

### New Mexico

The 7.7 miles of the project area in New Mexico are in Socorro County, which is within the Southwestern Mountains-Augustine Plains Intrastate Air Quality Control Region (AQCR 156) and classified as being in attainment or unclassifiable/attainment for all criteria pollutants (40 CFR Part 52, Subpart GG).

**Nevada**

The 7.4 miles of the project area in Nevada are in Clark County, which is within the Clark-Mohave Intrastate Air Quality Control Region (AQCR 13). This AQCR is designated as in attainment or unclassifiable/ attainment for all criteria pollutants (40 CFR Part 52, Subpart DD).

**California**

In California, the project area is located within desert portions of San Bernardino and Kern counties, within the Southeast Desert Intrastate Air Quality Control Region (AQCR 33). This AQCR is classified as nonattainment for PM10 and ozone and is in attainment for other criteria pollutants (40 CFR Part 52, Subpart F). The Kern County portion of the project area is under the jurisdiction of the Kern County Air Pollution Control District (KCAPCD). The San Bernardino County portion of the project area is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD).

A network of stations for measuring ambient air pollutant concentrations is used to monitor compliance with national and local air quality standards. Table 11 shows the most recent ambient air quality data for stations located in the Southeast Desert Air Basin in the vicinity of the project area. Air quality within the project area in California is typical of open desert, with few major industrial point sources of pollutants located in the area and transport of pollution from the Los Angeles and San Bernardino areas and particulate matter from desert wind storms. Local traffic on unpaved roads, mining, military exercises, off-highway vehicle (OHV) recreation, and construction are other local sources of particulate matter. Air quality in the project area can also vary significantly as a result of seasonal weather patterns.

## NOISE

**New Mexico**

No private lands are located along the project area in New Mexico. As a result, there are no residential receptors that would potentially be affected by the proposed project in New Mexico. The public lands in New Mexico are used for dispersed recreation and for limited mining activities. The most heavily used area adjacent to the project area is the rock climbing area in Box Canyon near Highway 60. The project area passes approximately 1,000 feet east of the main climbing area.

**Nevada/California**

Several noise-sensitive areas exist along the project area in Nevada and California. The project area extends through largely undeveloped areas that are relatively quiet. Existing noise sources along the project area include surface roadways, interstate freeways, railroads, and military/industrial complexes. Noise-sensitive areas typically found in populated areas include residences, schools, hospitals, and places of worship. The project area passes through several rural communities, including Harvard and Aerial Acres, and through the incorporated communities of Yermo and California City, all in California. In addition, sporadic residences not associated with identified communities may also be present along the project area. Table 12 identifies the location of single-family residences (SFRs) within 1,000 feet of the project area. This identification is based on review of U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle Maps.

Other noise-sensitive areas along the route include biological receptors in special management areas, wilderness areas both crossed by and adjacent to the right of way, and users of recreation and public interest areas along the project area. The existing setting for biological receptors is addressed in the discussion of common wildlife and Animal Species of Concern, while the existing setting for noise-sensitive users of recreation areas, wilderness and public interest areas is addressed in the Land Use and Recreation section.

## WATER RESOURCES

### New Mexico

**Surface Water.** The project area in New Mexico crosses three intermittent creeks that are tributaries to the Rio Grande. The Rio Grande is the only perennial river in the vicinity, but it is not crossed by the project area. Average annual precipitation ranges from about 8 inches in the Rio Grande Valley to 14 inches on the mesas and uplands. Most of the precipitation falls during summer thunderstorms, which are usually brief, but sometimes heavy, and can produce flash flooding (USDA 1988). No wetlands are crossed by the project in New Mexico.

**Groundwater.** No significant groundwater resources are beneath the project area in New Mexico. Much of the terrain crossed is bedrock, and those areas with more than 5 feet of alluvium are gravelly and do not retain water very well (USDA 1987).

### Nevada/California

**Surface Water.** The California and Nevada segments of the project area cross two major surface water basins within the Mojave Desert: the South Lahontan Basin and the Colorado River Basin. The South Lahontan Basin is an interior-draining basin with no outlet to the sea. Surface water in this basin is mainly limited to streams originating in higher mountains. In the lower elevations, the streams are dry washes for most of the year and only flow during, and shortly after, brief seasonal thunderstorms. Rainfall and humidity are low in the Mojave Desert. Except for some of the higher elevations, rainfall averages less than 4 inches per year. It usually comes in short-duration, high-intensity storms that result in flash floods, which can produce major changes in the desert terrain. The Mojave River, which terminates at Soda Lake, is the only major river in this basin near the coaxial cable route. The project area does not cross the Mojave River; it follows the river, almost a mile north of it, 7 miles east of Yermo.

The Colorado River is crossed by the coaxial cable just west of Bullhead City, Arizona. The project area does not include the Colorado River because the project begins at a point west of the river. The project area crosses some dry washes in the Colorado Basin. Like the streams in the South Lahontan Basin, the streams in the Colorado Basin are mostly dry washes, some of which drain into the Colorado River when they are flowing.

The project area in Nevada and California does not cross any wetlands, springs, or artesian wells (E & E 1996). Zzyzx Springs, a unique cultural and biological feature, flows into Soda Lake, but the project area crosses Soda Lake about 3 miles north of the springs (BLM 1978).

The project area crosses numerous intermittent creeks and washes, and one dry lake in California and Nevada. Table 13 lists the washes identified on USGS topographic maps for the project area and field-checked by AT&T (USGS 1970-1988).

To protect the coaxial cable and its ancillary structures, erosion control devices were placed in some areas with high potential for flash-flooding or erosion. Some of the washes that support higher peak flows contain boulders held in place with steel posts and wire just downstream of the cable to protect the cable from displacement caused by erosion during high flow events in the wash. Low earthen berms surround some of the repeater huts in areas that are potentially susceptible to flash floods. In Kelso Wash, a 3- to 4-foot-high retaining wall along the west bank of the wash prevents bank erosion and flooding of a nearby repeater hut. This retaining wall extends approximately 300 feet upstream, decreasing in height as the channel bottom rises. Low berms also exist along much of the access corridor, probably the result of grading and vehicle usage.

**Groundwater.** Groundwater in the Mojave Desert has been developed for domestic, agricultural, and industrial (mining) uses. Severe overdraft occurs in many of the groundwater basins. Within California, the groundwater basins crossed by the project area include the Piute, Lanfair, Kelso, Soda Lake, Lower Mojave River, Harper, and Antelope Valleys. Because of the arid climate, shallow aquifers (less than 20 feet below ground surface [bgs]) do not exist in these basins or in the areas of Nevada crossed by the project area (CDWR 1980; USDA 1988).

## VEGETATION

This section presents a general overview of the vegetation and sensitive plant communities potentially occurring along the project area and is based on the Biological Report in Appendix B of E & E's *Environmental Report of the P140 Coaxial Cable Removal Project* and Mark Bagley's *Additional Botanical Surveys for the Proposed AT&T P140 Coaxial Cable Removal Project, California.* Because the cable right of way and access corridor are parallel to each other, this overview presents conditions relevant to the area surrounding both the right of way and the access corridor. Areas where the right of way or corridor conditions vary from surrounding areas in terms of vegetation have been noted in the text.

Since the installation of the original coaxial cable, natural vegetation on the cable right of way has begun to reestablish. The access corridor and repeater hut sites have, for the most part, remained clear of vegetation. While both significant shrub growth and herbaceous growth have begun to reestablish on the right of way, tree and yucca growth is noticeably absent. Cactus growth, while present to a small degree, was observed at a considerably lower density on the right of way in comparison to the cactus density of the communities adjacent to the right of way. It was also noted that, depending on the community traversed by the right of way, the composition of the shrub community within the existing right of way did not always mirror the shrub community adjacent to the right of way. As an example, community composition between the existing right of way and the adjacent desert was extremely different in the areas of blackbush scrub traversed by the right of way in California. Off the right of way, blackbush *(Coleogyne ramosissima)* singly dominates the shrub community; on the right of way, blackbush comprises only a minor portion of the shrub community. During natural revegetation of the right of way, opportunistic native shrub species that are more tolerant of disturbed soils established more readily than the blackbush. The community structure on the right of way within the more

widespread Mojave desert communities (i.e., creosote bush scrub, saltbush scrub, and mixed woody scrub) was not as noticeably different from the adjacent undisturbed lands. Minor differences in the species composition, as well as the shrub density, were noticeable.

Several exotics are widespread and abundant in desert scrub communities crossed by the project area. These include red-stemmed filaree (*Erodium cicutrarium*), Mediterranean schismus (*Schismus barbatus*), red brome (*Bromus madritensis* ssp. *rubens*), and cheat grass (*Bromus tectorum*).

The remainder of this section discusses vegetative communities found along various segments of the project area. The vegetative communities along the project area are noted on resource maps in Appendix A.

**New Mexico**

**Vegetative Communities.** The 7.7-mile New Mexico segment of the project area is located within the extreme northern extent of the Chihuahuan Desert. Based on field observations, two primary communities and a third subcommunity are traversed by the project area. Vegetative communities in New Mexico were classified based on Brown (1982) and Medellin-Leal (1982).

*Chihuahuan Desert Scrub* — Chihuahuan desert scrub is traversed by the easternmost 3.9 miles of the project area in New Mexico. Dominants within this community type include creosote bush *(Larrea tridentata)* and dalea *(Dalea,* ssp., *lycium,* ssp.*)*. Interspersed among the shrubs are widely scattered cacti *(Opuntia phaeacantha, O. violacea)* and one species of cholla *(O. ramosissima)*.

*Semidesert Grassland* — Semidesert grassland is traversed by the project area for 3.4 miles from the Chihuahuan desert scrub west to Socorro Canyon. This community is differentiated from the Chihuahuan desert scrub by the general absence of creosote bush and the abundance of low-growing perennial grasses, including gramma grasses (*Bouteloua* spp.), three-awn grasses (*Aristida* spp.), and spike dropseed (*Sporobolus contractus*). Shrubs are much more widely scattered within the right of way than in the adjacent scrub community.

*Desert Wash Scrub* — Desert wash scrub is a phase of the more widespread Chihuahuan desert scrub. Within the project area, this community occurs along 0.4 mile of the broad, flat canyon bottom of Socorro Canyon, located at the northern terminus of the project area in New Mexico. Dominant species include burro bush *(Hymenocla monogyra)*, desert willow *(Chilopsis linearis)*, fourwing saltbush *(Atriplex canescens)*, and snakeweed *(Gutierrezia sarothrae)*.

**Nevada/California**

**Vegetative Communities.** The project area in California and Nevada is entirely within the Mojave Desert. Within the general desert ecosystem, 10 different habitat communities were identified during field surveys along the project area; Mojave creosote bush scrub predominated. Vegetative communities in California and Nevada were classified in accordance with the California Natural Diversity Data Base (CNDDB) natural community system (Holland 1986). Juniper-sagebrush scrub, a type described by Thorne *et al.* (1981), and Colorado River terrace and floodplain were classified based on the fluvial geomorphology and plant species present. Relatively small disturbed areas associated with vehicle travel, mines, powerlines, and off-highway vehicle use were not mapped. The approximate boundaries of each community type traversed by the project area are identified on the project resource

maps in Appendix A. During the process of mapping communities, Joshua tree *(Yucca brevifolia)* woodlands were not identified as primary communities. The locations of Joshua tree woodlands are included with the predominant desert scrub community associated with the Joshua trees.

*Mojave Creosote Bush Scrub* — Mojave creosote bush scrub is the dominant community type traversed by the project area. An estimated 162.6 miles of the project area are covered by this community. Creosote bush dominates this community type (Holland 1986; Rowlands *et al.* 1982; Vasek and Barbour 1977), but the associated community diversity varies considerably along the project area, especially from the eastern Mojave Desert to the western Mojave Desert. Additionally, the composition of this community directly on the right of way and directly adjacent to the right of way varies considerably at times. Common shrubs associated with this community include burro bush (*Ambrosia dumosa*), cheesebush (*Hymenoclea salsola*), Mojave saltbush and allscale (*Atriplex spinifera* and *A. polycarpa*), and dalea (*Dalea fremontii*). Joshua tree woodlands are commonly associated with the Mojave creosote bush scrub traversed by the project area. It appears that Joshua trees were removed from the right of way during the original installation of the cable in the 1960s, and almost no trees are currently on the right of way. Various species of cactus also form significant portions of the communities at various locations. Although some reestablishment of succulents has occurred since the cable was initially installed, densities of the cactus and cholla on the existing right of way were significantly less than on the adjacent nondisturbed right of way. Annual cover in this community is often dominated by red-stemmed filaree (*Erodium cicutrarium*) and Arabian grass (*Schismus arabicus*), both introduced species that have become widespread from historic grazing of the desert. Annual growth varies considerably along the project area. Within the western Mojave Desert, annual growth was observed to be sporadically abundant in the spring of 1996. Because of minimal rainfall totals in the late winter and early spring of 1996, current year annual growth was virtually nonexistent in the eastern Mojave Desert.

*Blackbush Scrub* — Blackbush scrub is characterized by the strong dominance of blackbush, which typically occurs at higher elevations in the desert (Holland 1986; Thorne *et al.* 1981; Vasek and Barbour 1977). This community was mapped at two locations covering approximately 0.9 mile of the project area. At each of these locations, the project area traverses a transitional zone between several different communities, including Juniper-sagebrush scrub and Mojave mixed woody scrub. In general, where the existing right of way traversed blackbush scrub habitat, vegetation was significantly different on the right of way versus off the right of way. Very little blackbush has reestablished on the right of way. This does not appear to be due to any continuing disturbance, but probably reflects this species' lack of tolerance to disturbed soil conditions.

*Mojave Mixed Woody Scrub* — Mojave mixed woody scrub (Holland 1986; Thorne *et al.* 1981) is traversed by the route for approximately 19.1 miles of the project area. Most of the areas of this community are traversed by the route at higher elevations in the New York Mountains. The community primarily occurs in the transition between Mojave creosote bush scrub and Juniper-sagebrush scrub/Pinyon-juniper woodlands. Species composition includes cheesebush, box thorns (*Lycium* ssp.), Cooper goldenbush (*Ericameria cooperi*), spiny hop-sage (*Grayia spinosa*), and Mormon tea (*Ephedra* spp.). Joshua tree woodlands are scattered throughout the community, and Mojave yucca (*Yucca schidigera*) is also quite common.

*Juniper-Sagebrush Scrub* — Juniper-sagebrush scrub is traversed by the route for a short distance along the project area, covering approximately 0.4 mile at the highest elevation in the New York Mountains. This community type is described as a phase of sagebrush scrub (Thorne *et al.* 1981). Within the project area, the Juniper-sagebrush scrub is more of a transitional community situated in patches between Pinyon juniper woodland, Mojave mixed woody scrub, and blackbush scrub with large expanses of Juniper-sagebrush south of the project area in Round Valley. Dominant species include sagebrush *(Artemisia tridentata*) and Utah juniper (*Juniperus osteosperma*). Directly upslope from this community is Pinyon juniper woodland. This community type is located on rocky, granitic terrain. The project area traverses very limited areas of transition from the Juniper-sagebrush scrub to the Pinyon-juniper woodland; growth of the Pinyon-juniper on the existing right of way is sparse.

*Mojave Mixed Steppe* — Mojave mixed steppe occupies a small portion of the desert traversed by the project area, covering approximately 0.7 mile. The dominant grass species within the grassland is big galleta grass (*Pleuraphis rigida*) (Holland 1986). This species is also quite prevalent on very sandy sites throughout the Mojave creosote bush scrub.

*Desert Sink Scrub* — Desert sink scrub (Holland 1986) is traversed by the project area on both sides of dry Soda Lake. The total length of crossing is approximately 1.1 miles. Desert sink scrub is dominated by seep weed (*Suadea* spp.). No vegetation was observed on the actual lake bed.

*Desert Saltbush Scrub* — Desert saltbush scrub is traversed by the route for approximately 22.1 miles of the project area. Almost all areas of this community are west of Harper Lake. The desert saltbush scrub community is found on many of the flatlands that are traversed by the project area. These areas are typically underlain by a hardpan, creating subsurface conditions conducive to saltbush growth. Dominants within this community include Mojave saltbush, shadscale (*Atriplex confertifolia*), four-wing saltbush, and allscale (Holland 1986). Burro bush and widely scattered creosote bush are common associates.

*Mojave Wash Scrub* — Mojave wash scrub is a fairly common subcommunity throughout the Mojave Desert, occurring in washes, arroyos, and canyons. Typical species include cheesebush and rabbitbrush (*Chrysothamnus paniculatus*) (Holland 1986). For the most part, these communities were not called out because of their small size; they are restricted to within the linear channels of sandy washes. The Mojave wash scrub was extensive or significant enough to be mapped separately at three distinct locations between Zzyzx Road at I-15 and the Cronese Valley, covering approximately 1.6 miles of the project area. Each of these washes contains scattered to locally dense overstories of microphyllous trees, including cat's claw (*Acacia gregii*), desert willow (*Chilopsis linearis*), smoke tree (*Psorothamnus spinosa*), and mesquite (*Prosopsis* spp.).

*Joshua Tree Woodland* — Joshua tree woodland is distributed along the study corridor in the higher elevations of the eastern Mojave, from Lanfair Valley to Cedar Wash and just west of the Marl Mountains; near the Irwin Road crossing north of Barstow; and near the western end of the project area. These woodlands occur with understories of Mojave creosote bush scrub, Mojave mixed woody scrub, and blackbush scrub. The three types of understory scrub occur both with and without a Joshua tree overstory and make for very different habitats. The Joshua tree overstory was often fairly sparse along the project area, particularly at the limits of its distribution where outlying individuals were often very widely spaced. Areas of fewer than eight Joshua trees per acre were not considered Joshua tree woodlands, but as the understory scrub type with widely scattered Joshua trees.

*Colorado River Terrace and Floodplain* — West of Bullhead City, Arizona, the coaxial cable crosses the Colorado River floodplain. The project area in Nevada begins at MP 6000, which is on the river terrace, approximately 0.6 mile west of the river. Although the proposed action will not affect the Colorado River floodplain, the vegetative structure of the floodplain is described as background information in this report.

The Colorado River floodplain includes the natural levee of the river (which has been additionally built up and fortified with riprap) and an old backwater channel. The floodplain levee is sparsely vegetated adjacent to the river. Away from the river, the levee is more densely vegetated with arrowweed (*Pluchea sericea*), mesquite, and tamarisk *(Tamarix ramossissima)*. Beyond this levee, approximately 800 feet from the river, is the backwater channel. The backwater channel is a palustrine open water (POW) wetland. Open water conditions likely developed after the initial installation of the original P140 cable through the wetlands. The majority of this backwater channel outside the right of way is palustrine emergent and scrub-shrub wetland. The edges of these POW wetlands are ringed with cattail (*Typha* sp.), tule (*Scirpus* sp.), and willow (*Salix* sp.). A steep embankment separates the floodplain from the adjacent terrace, which has similar species to the natural levee as well as scattered saltbush. Evidence of recent fire was noted in both the floodplain and on the terrace.

**Sensitive Vegetation Types.** With few exceptions, the vegetation observed along the project area was typical for the region and was typical of widely distributed community types. Some exceptions were Mojave wash scrub areas that had an overstory of microphyllous trees found at three locations in the corridor, as described above. These areas are not typical for the region but should be considered sensitive because of their importance to wildlife and infrequent occurrence in this portion of the Mojave Desert (they are more common farther south). In addition, the area in Cronese Valley with honey mesquite (*Prosopis glandulosa* var. *torreyana*) and desert willow is recognized by the BLM as an Unusual Plant Assemblage (BLM 1980).

The project area passes through four other areas mapped by the BLM as Unusual Plant Assemblages (BLM 1980a, 1980b): the Piute Valley Smoke Tree Assemblage, the Lanfair Valley Desert Grassland Assemblage, the Round Valley Sagebrush Assemblage, and the Western Mojave Desert Mojave Saltbush Assemblage. The BLM has designated the Piute Valley Smoke Tree Assemblage a Sensitive Unusual Plant Assemblage; the other assemblages are not designated as sensitive.

The mapped boundaries of these BLM Unusual Plant Assemblages are not precise, and each Unusual Plant Assemblage does not occupy the entire area delimited; rather, the boundaries represent a broad area wherein representative stands of the Unusual Plant Assemblages can be found (BLM 1980b). For each of the five Unusual Plant Assemblage areas crossed by the project area, the Unusual Plant Assemblage occurs over a much smaller area than indicated by the BLM map, or it does not occur along the project area.

## COMMON WILDLIFE

This section presents a general overview of common wildlife species potentially occurring along the project area and is based on the Biological Report in Appendix B of E & E's *Environmental Report of the P140 Coaxial Cable Removal Project*. Because the cable right of way and the access corridor are located parallel to each other, this overview is intended to present conditions relevant to the area

surrounding the project area. Where the right of way or access corridor conditions vary from surrounding areas in terms of habitat, this has been noted in the text.

**New Mexico**

Species diversity for the New Mexico portion of the project area is similar to that discussed in the California/Nevada section. Because the New Mexico portion is located in a different desert setting than the California/Nevada portion, the species within a given genus will vary from the Mojave Desert to the Chihuahuan Desert. Major differences in faunal composition include the exclusion of mountain sheep from the list of expected mammals and the absence of the desert tortoise from the list of reptiles expected in the project area.

**Nevada/California**

Except for the species of concern discussed later in this report, wildlife typically associated with the Mojave Desert are distributed across the entire project area. Perennial watercourses capable of maintaining fishery populations are not traversed.

The Mojave Desert is home to many different species of wildlife. Each has effectively adapted to the extreme temperatures and general lack of water in the desert. Most species have adapted by limiting activity during the extreme heat of midday. Forage for food occurs in the early hours of the day or late in the evening. Many species are primarily nocturnal and avoid the heat of the day. For this reason, surveys conducted during daylight hours are apt to identify only signs of animals rather than to make direct observations of animals.

Mammalian species found throughout the desert include the coyote, badger, kit fox, black-tailed jackrabbit, desert cottontail, antelope and Mojave ground squirrel, kangaroo rats, pocket and deer mice, and numerous species of bats. Within the mountains of the eastern Mojave Desert, populations of bighorn sheep are found at higher elevations. Although not native, feral burros exist in some areas of the desert.

Field surveys conducted along the project area indicate use of the coaxial cable right of way by both large and small mammals. Considerable numbers of mammal burrows were identified within the existing right of way, with concentrations of burrows and dens seemingly associated with the soil mound directly above the buried cable. Original installation of the cable required excavation of a ditch so that the cable could be buried at depth. This has created a microhabitat in which the soils were generally less compact than adjacent areas. Mammals have taken advantage of this looser soil to dig their dens or burrows, thus increasing the mammal population on the right of way.

Reptiles are common throughout the desert and include desert tortoise (discussed in greater detail in the next section of this report), striped whipsnakes, coachwhips, sidewinders, Mojave green rattlesnakes, zebratail lizards, desert horned lizards, and collared lizards. Field survey observations were limited to occasional sightings of tortoises, lizards, and Mojave rattlesnakes, and to habitat used by desert tortoise.

Raptors found throughout the desert include the prairie falcon, red-tailed hawk, and great horned owl. These large raptors tend to forage over great distances. Vegetation on the right of way is predomi-

nately shrubby and herbaceous, limiting its usefulness as nesting habitat for the raptors. The field surveys did indicate that raptors use the right of way as forage habitat, and the wooden MPs along the project area as roosting sites. During the field surveys, small mammal bones, owl pellets, and bird droppings were found frequently beneath these posts.

Other birds typically found in the desert include quail, mourning doves, cactus wrens, thrashers, and common ravens. As with the raptors, ravens also use the wooden MPs for roosting sites. Several juvenile desert tortoise shells were identified beneath the MPs. These are likely from raven predation.

## SPECIES OF CONCERN

### New Mexico

**Plants.** Eleven plant species of concern in New Mexico were identified as potentially occurring along the project area based on agency consultations (Cumpian 1996) and existing data (Sivinski and Lightfoot, 1995). These 11 species are listed on Table 14, along with their federal and state rank or status, habitat type and distribution, and comments summarizing field survey results. No suitable habitat was observed along the study corridor for these 11 species during the field survey. Thus, none of these species was determined to potentially occur in the project area because the appropriate habitat conditions were not found in potential areas of disturbance.

**Animals.** On the basis of agency consultations and review of existing data, 10 animal species of concern in New Mexico were identified as potentially occurring in the vicinity of the project area (Fowler-Propst 1996; Leal 1996; New Mexico Department of Game and Fish 1995, 1996). Based on field observations, the Texas horned lizard was the only New Mexico species of concern determined to have a potential to occur based on direct observation or suitable habitat. No individuals of this species were observed during field surveys of the project area in New Mexico. Information about the Texas horned lizard and the species of concern potentially occurring along the Nevada and California sections of the project area is presented in Table 15.

### Nevada

**Plants.** Four plant species of concern in Nevada were identified as potentially occurring along the project area based on agency consultations and existing data (Abrams and Ferris 1923-1960; Bagley 1993, 1991, 1989, 1987, 1986; Barneby 1977, 1964; Benson 1982; Cronquist *et al.* 1984; Dames & Moore 1993; Hickman 1993; Munz 1974; Skinner and Pavlik 1994; Thorne *et al.* 1981; USFWS 1996a, 1996b, 1995, 1988). The four plant species of concern preliminarily identified for Nevada are listed in Table 16 along with their federal and state rank or status, habitat type and distribution, and comments summarizing field survey results. None of these four species was observed along the study corridor during the field surveys. Suitable habitat for two of these species, Alkali mariposa lily (*Calochortus striatus*) and Parish's phacelia (*Phacelia parishii*), were not observed in the study corridor. There are no known populations of the other two species, Howe's hedgehog cactus (*Echinocereus engelmanni* var. *howei*) and White-margined beardtongue (*Pentsteman albormarginatus*), within 20 miles of the project area. These species or their dry remains should have been observable if they occurred in the project area.

**Animals.** Three animal species of concern in Nevada were identified as potentially occurring along the project area based on agency consultations and existing data (Cooper 1996; Mendoza 1996, Padilla 1996; USFWS 1995). The desert tortoise is the only one of these species that is listed as threatened or endangered by the federal or Nevada state government. The desert tortoise has been identified as the single species most likely to be affected by the project area. The gila monster (*Heloderma suspectum*) and the chuckwalla (*Sauromalus obesus*) are Nevada species of concern. Neither of these two species of concern was observed during the 1996 biological surveys.

In 1994, the USFWS developed a Recovery Plan for the Mojave population of the desert tortoise and proposed Desert Wildlife Management Areas (DWMAs) and associated management recommendations in Nevada and California (USFWS 1994). The BLM Las Vegas District in Nevada has proposed to adopt the Piute/Eldorado DWMA and associated management practices from the Desert Tortoise Recovery Plan in its draft supplement resource management plan for the public lands in the vicinity of the project in Nevada (BLM 1994). The project area crosses approximately 0.6 mile of the proposed Piute/Eldorado DWMA in Nevada (BLM 1994).

Also in 1994, the USFWS designated critical habitat for the desert tortoise in Nevada and California based on the proposed DWMAs (USFWS 1994). Designation of critical habitat provides protection of desert tortoise habitat until the time that the Desert Tortoise Recovery Plan is implemented and DWMA management is employed (USFWS 1994). The project area crosses 0.6 mile of critical habitat in Nevada that corresponds to the proposed Piute/Eldorado DWMA. The segments of critical habitat in the project area in California and Nevada are shown on Figure 14 and listed in Table 17.

**California**

**Plants.** Thirty-three plant species of concern in California were identified as potentially occurring along the project area based on agency consultations and existing data (Abrams and Ferris 1923-1960; Bagley 1993, 1991, 1989, 1987, 1986; Barneby 1977, 1964; Benson 1982; BLM 1980a; CDFG 1996, 1994; CDM&G 1967, 1964, 1962, 1961; Cronquist *et al.* 1984; Dames & Moore 1993; ENSR 1989; ERT 1988; Hickman 1993; Moe 1988; Munz 1974; Skinner and Pavlik 1994; Thorne *et al.* 1981; USFWS 1996a, 1996b, 1993, 1988). The 33 species of concern preliminarily identified for California are listed in Table 18 at the end of this section with their federal and state rank or status, habitat type and distribution, and comments summarizing field survey results. All of these 33 plant species of concern are former federal Candidate species and/or state species of concern; none is listed as an endangered or a threatened species by federal and/or state agencies (CDFG 1996; USFWS 1996a, 1996b, 1993). One species, the Lane Mountain milk-vetch (*Astragalus jaegerianus*), is a proposed endangered species.

Based on the field survey results, 23 of the 33 preliminarily identified species of concern were eliminated from further consideration for the following reasons:

None of the 23 species was observed in the study corridor; and either

No suitable habitat was observed along the study corridor; or

Marginal suitable habitat was observed in certain areas along the study corridor, but growing plants or dried remains of these species are expected to have been observable if they occurred in the project area.

Of these 33 species of concern, only five species were observed in, or previously identified adjacent to, the project area. Field surveys identified four populations of Cima milk vetch (*Astragulus cimae* var. *cimae*), a California Native Plant Society (CNPS) List 1B species (rare or endangered in California and elsewhere); one occurrence of purple bird's beak (*Cordylanthus parviflorus*), a CNPS List 2 (rare, threatened, or endangered in California only) species; one population of desert cymopterus (*Cymopterus deserticola*), a federal species of concern and a CNPS List 1B species, two populations of sand linanthus (*Linanthus arenicola*), a CNPS List 2 species; and eight occurrences of Mojave indigo bush (*Psorothamnus arborescens* var. *arborescens*), a CNPS watch list species along the project area.

Field survey results were inconclusive for one annual species, the small-flowered androstephium (*Androstephium breviflorum*). Although no small-flowered androstephium were observed during the surveys, they require similar habitat to the sand linanthus and are known to have occurred in the west end of the Cronese Valley where the sand linanthus was observed during the 1997 survey. Four other annuals — Providence Mountain milk-vetch (*Astragalus nutans*), Clokey's cryptantha (*Cryptantha clokeyi*), Mojave monkeyflower (*Mimulus mohavensis*), and Aven Nelson's phacelia (*Phacelia anelsonii*) — were not observed along the study corridor. While potentially suitable habitat was observed for these annuals, none was observed in the 1996 or 1997 botanical surveys, and their potential to occur appears to be low.

**Animals.** On the basis of agency consultations (Cook 1996; Cushman 1996; Noda 1996) and review of existing data (Aardahl and Roush 1985; Berry 1984; BLM 1993; CFR 1996; Grover and DeFalco 1995; Spang *et al.* 1988; USFWS 1996a, 1996b, 1994), 29 animal species of concern in California were identified as potentially occurring in the vicinity of the project area. Based on field observations of suitable habitat, 10 of the animal species in California were determined to actually have a potential to occur based on direct observation or suitable habitat. Of these 10 animal species of concern, only three species — the desert tortoise, the Mojave ground squirrel (*Spermophilus mohavensis*), and the Swainson's hawk (*Buteo swainsoni*) — are listed by either federal or state agencies as threatened or endangered (CFR 1996). The remainder are listed as federal or state species of concern. These 10 animal species are presented in Table 15.

Field surveys identified four distinct areas along the project area with desert tortoise populations. Several Mojave ground squirrels, prairie falcons (*Falco mexicanus*), loggerhead shrikes (*Lanius ludovicianus*), and one Swainson's hawk were observed during the field surveys. These five species are asterisked in Table 15.

The only federal endangered or threatened species that positively occurs along the project area is the desert tortoise, which has been identified as the species most likely to be affected by the project.

The BLM, as part of its management of the CDCA, has designated habitat categories for the desert tortoise (BLM 1993). This designation was intended to identify habitat areas and establish management goals and criteria for desert tortoise habitat on public land within the CDCA. The goals for each habitat category are as follows:

category I: maintain stable, viable populations and increase populations where possible
category II: maintain stable, viable populations
category III: limit declines to the extent possible using mitigation measures

The project area crosses approximately 92.5 miles of Category I, II, or III habitat in the CDCA. The segments of designated BLM habitat crossed by the project area are shown on Figure 15 and listed in Table 17. Designated habitat areas are also identified on the project resource maps (see Appendix A).

In the 1994 Desert Tortoise Recovery Plan, the USFWS proposed DWMAs and associated management recommendations in Nevada and California (USFWS 1994). The BLM and the NPS are currently considering measures to implement the recovery plan through the development of the West Mojave Coordinated Management Plan, the Northern and Eastern Mojave Coordinated Management Plan, and the General Management Plan for the Mojave National Preserve.

In the areas east of U.S. 395 along the project area, the critical habitat areas designated by USFWS have a high correlation to the BLM designated Category I, II, and III habitat areas. The project area crosses approximately 100.9 miles of critical habitat in California (including approximately 28.8 miles of critical habitat in the Mojave National Preserve). The critical habitat units crossed are noted in Figure 14, Table 17, and on the project resource maps in Appendix A.

The desert tortoise is also a state-designated threatened species in California and Nevada. Based on field observations, the only other state-designated endangered or threatened animal species potentially occurring along the project area are the Mojave ground squirrel and the Swainson's hawk, both of which are California-designated threatened species. Mojave ground squirrel habitat occurs along approximately 56 miles of the project area, from an area 10 miles northwest of Barstow to the end of the project area at the Mojave main station (Aardahl and Roush 1985). Habitat areas for the Mojave ground squirrel are shown on Figure 16 and are identified on the project resource maps (see Appendix A).

## CULTURAL RESOURCES

### New Mexico

**Prehistoric and Historic Background.** Knowledge of the Paleo-Indian Period remains poorly developed in the region around the project area. Archeological collections from this period are often dominated by large bifacial lithic weapons and tools, predominantly projectile points and knives. These artifacts rarely occur in stratified deposits, and many researchers characterize this period as one of nomadic big-game hunting (Irwin-Williams and Haynes 1970; Gossett and Gossett 1990). The succeeding Archaic Period involves two cultural traditions in the study vicinity: the Cochise, thought to be the forerunners of the Mogollon culture; and the Oshara, purported ancestors of the Anasazi (O'Hara and Elyea 1985). The Formative Period dates from about A.D. 200 to 1000 and is distinguished by the appearance of pottery, more substantial pithouses, ceremonial structures, aboveground architecture, distinctive lithic assemblages, and an increased focus on cultivated plant foods. The latest prehistoric period spans the period from A.D. 1100 to 1540. This period is characterized by coalescence of the population into large plaza villages and an expansion of sites into previously unoccupied areas (Berman 1979). There is evidence from several sites, such as La Jara (LA 786), located northwest. Marshall and Walt (1984) speculate that population growth in the early historic period resulted, in part, from colonization by displaced Great Basin and Plateau populations. After the arrival of the Spanish, and down to about A.D. 1675, some pueblos in the area were still occupied. The earliest documented presence of Navajo in the Alamo region dates from 1708 (Betancourt 1980). By the 1740s, increased pressures from the Ute to the north and the Spanish to the south were forcing many Navajo back out of the area.

Once the railroad was completed from Socorro to Magdalena and a smelter was established near Park City in the late 1800s, Socorro became a prominent industrial and shipping center for the region. The project area lies within the Luis Lopez Manganese District (Miesch 1956), a successful mining operation in recent history.

**Research and Survey Results.** Background information on survey methodology and individuals contacted during the prefield research can be found in *A Cultural Resources Inventory for a 7.5 mile Section of the AT&T Communications Cable near Socorro, New Mexico* (Escondida 1997). Five sites and 17 isolated manifestations (IMs) were found in the survey area. With one exception, the IMs are flaked stone artifacts, primarily on locally available rhyolite. The exception is an IM consisting of several Orange Nehi beverage cans dating to the post-World War II era. All IMs were fully described; one IM, a diagnostic projectile point, was collected. None of the IMs is considered eligible for the National Register of Historic Places (NRHP).

Of the five sites, two were newly discovered (LA 113997 and LA 113998), and three were previously recorded. Of the latter, one was assigned a new Museum of New Mexico site number (LA 113999) and was rerecorded; one retained its original number (LA 3915) and was rerecorded; and one very large site (LA 55991) was revisited, and its boundaries within the project area were reevaluated. All of the sites are flaked stone or flaked stone and groundstone scatters and lack ceramics or architectural features. LA 55991 does include a rock shelter at its northern end, outside of the project area, and other rock shelters exist nearby, though not within the survey area. All of these sites are considered eligible for the NRHP because they have yielded, or may be likely to yield, information important to our understanding of prehistory. Note that the small size and disturbed condition of LA 113999 make it a less likely candidate than the others. These sites are listed in Table 19: Archeological Sites within the Project Area.

**Native American Resources.** Consultation between the NPS and appropriate governmental agencies is ongoing regarding potential affects of the project on Native American resources. Based on information obtained to date, Native American resources are not expected to be present in the project area.

## California/Nevada

**Prehistoric and Historic Background.** Warren and Crabtree (1986) describe five prehistoric periods for this region, each with corresponding cultural remains such as projectile points, pottery, and in some cases, trade beads. The earliest period has been identified as the Lake Mojave Period and is believed to date from 10000 to 5000 B.C. Characterizing this period are stemmed series projectile points (Lake Mojave, Parman, Silver Lake, etc.), specialized scraper tools, crescents, and a few, if any, milling stones. Sites containing Lake Mojave Period materials are often found on the former shorelines of extinct Pleistocene lakes.

The Pinto Period is thought to date from 5000 to 2000 B.C., but these dates are still speculative (Warren and Crabtree 1986). In the Mojave Desert, this time period witnessed the desiccation of the Pleistocene lakes and the generally hot and dry conditions that some archeologists believe led to the abandonment of the Mojave Desert. Pinto Period sites are often found in association with dry lake beds and dry stream channels, leading some researchers (Mehringer 1977) to question the extent and duration of the postulated dry period.

The Gypsum Period dates from 2000 B.C. to A.D. 500. Elko Series projectile points, along with Humboldt Concave Base and Gypsum Cave points, are the most typical forms of projectiles from this period (Warren and Crabtree 1986). Toward the end of this period, smaller side and corner notched points (Rose Springs Series) first appear, implying that the bow and arrow technology had arrived.

The Saratoga Springs Period is dated from A.D. 500 to A.D. 1200 and essentially is seen as a continuation of the preceding Gypsum Period except in the type of representative projectile point that decreases in size as the bow and arrow technology becomes more widely adopted (Warren and Crabtree 1986). Rose Springs and Cottonwood Series projectile points typify the period, while the milling stone complex (mano and metate) and mortar and pestle continued to be used. In the eastern section of the Mojave Desert, the recovery of turquoise from mines near Halloran Springs brought in influences from the Anasazi, as evidenced by the presence of southwestern pottery at a number of sites.

The Shoshonean Period (A.D. 1200 to time of contact) is characterized by the presence of Desert and Cottonwood Series projectile points and "poorly defined types of brownware" (Warren and Crabtree 1986). Regional distinctions become apparent during this period, and the area from the upper portions of the Mojave River, the Mojave River Sinks, and the Mid Hills/New York/Providence Mountains down to the Colorado River contains a similar assemblage of "brown, buff, and red-on-buff pottery apparently derived from the Colorado River, as well as Desert Side-notched and Cottonwood Triangular points" (Warren and Crabtree 1986).

Near the cable right of way, archeological excavations have been conducted by Davis (1962) at the Rustler Rockshelter and by Donnan (1964) at Southcott Cave. D.L. True (True *et al*. 1966) conducted a limited survey and surface collection at 28 sites in the Providence and New York mountains. In 1965, a team of archeologists led by True did a sample survey of five areas within the Mojave National Preserve, and two of the areas appear to incorporate, or are close to, portions of AT&T's coaxial cable line (True *et al*. 1966). In 1988, 29 proposed vault locations (100-by-100-foot areas, spaced at roughly 4-mile intervals) along AT&T's coaxial cable "A" line (current project area) were inspected by Neal Neuenschwander (Peak & Associates 1988). No prehistoric or historic period remains were discovered at these vault locations.

The Mojave National Preserve, at the time of European contact, was controlled by a group of Southern Paiutes, the Desert Chemehuevi. Oral tradition and archeological evidence indicate that the Desert Chemehuevi were recent immigrants to the area, perhaps as late as A.D. 1700 (Rogers 1945). Prior to this time, Yuman speakers with ties to the Mojave Valley are thought to have occupied the area, from A.D. 700 to A.D. 1500.

In 1776, Father Francisco Garcés, a Spanish missionary, explored parts of the Mojave on his journey west from the Colorado River. Led by Native American guides, Garcés traveled the Mojave Indian trail in search of a direct route connecting San Gabriel Mission with Albuquerque and Santa Fe. The next contact with the Mojave came in 1826, when Jedediah Strong Smith led a company of 16 trappers from Utah to California using the Mojave Trail (Casebier 1975). After 1848, Mormon converts used the trail and eventually developed it into an important wagon road linking Salt Lake City to San Pedro Harbor (Warren and Roske 1981). It would become an important east-west link between the United States and California and, ultimately, would be selected for the southern route of the railroad.

By the mid-1850s, interest in finding a route for a transcontinental railroad led to several exploration parties into the Mojave National Preserve. The improvement of the Mojave Trail into a useable wagon

road was authorized by the U.S. Secretary of War in 1857; the assignment was given to Edward Beale. Between 1857 and 1860 Beale (with the aid of camels) improved portions of the Mojave Trail. By 1858, Beale declared the road ready for emigrant traffic, and a minimum of five emigrant parties left Albuquerque for Los Angeles. In August of 1858, Mojave Indians living along the Colorado River attacked the emigrants, forcing them to return to New Mexico. During the same year, an overland postal route was established, that also crossed the preserve, and trouble again was encountered with the Mojave Indians.

News of this trouble led to a punitive expedition in December 1858 and January 1859, organized by Major William Hoffman who traveled over the Mojave Trail toward the Colorado River before being forced to retreat. The following year, with a much larger contingent of troops, Hoffman established Fort Mojave (approximately 2 miles south of AT&T's coaxial cable line), which remained as a military outpost until 1890 (King and Casebier 1976). In 1867, the United States Army established additional outposts throughout the Mojave Desert. The Hancock Redoubt at Soda Springs was one of these posts, although it was soon abandoned.

**Research and Survey Results.** Background information on survey methodologies can be found in *Cultural Resources Assessment of AT&T's Proposed Cable Removal Project* (Peak and Associates 1997). Twenty-four archeological sites and 36 isolated artifacts were discovered within the inspected corridor. These sites are listed in Table 19. Four historic period sites are crossed multiple times by the cable alignment. Of the 24 sites, six were prehistoric period cultural resources: two lithic quarry and reduction areas, two habitation sites, a scatter of lithic tools and debitage, and the Mojave Trail. Twelve of the 24 archeological sites consist of historic period trail locations, roads, railroads, transmission lines, and an abandoned concrete-lined irrigation canal. The 1873 Von Schmidt California/Nevada state line has also been identified as an historic period cultural resource, and is crossed by the alignment. The remaining historic period cultural resources include three areas of refuse; one area with refuse and a partial foundation; a concrete water trough; and a refuse scatter, well, and water trough.

Thirty-six isolated artifacts were discovered during the survey. The prehistoric period isolates consist of three pottery shards, seven lithic tools (scrapers), five lithic worked flakes (incipient tools), six lithic cores, two utilized lithic debitage fragments, two lithic bifacial thinning debitage fragments, three debitage fragments, a lithic biface (incipient projectile point), a projectile point (Cottonwood Series), a unifacially utilized mano, a bifacially utilized mano, a metate, and a mortar. Historic period isolates were less numerous; one sanitary and one non-sanitary can were discovered.

**Native American Resources.** Consultation between the NPS and appropriate governmental agencies is ongoing regarding potential affects of the project on Native American resources. Based on information obtained to date, Native American resources are not expected to be present in the project area.

# LAND USE AND RECREATION

## Land Use

General land uses and special management areas, such as wilderness areas, found along the project area are discussed in this section. The section focuses on the physical land uses found along the project area, not on the land use policies or plans applicable to these areas.

Land management districts along the project area are identified in Table 20 and are shown on Figures 17 and 18. Table 21 summarizes the land ownership along the project area. The project resource maps in Appendix A show land management districts and ownership in greater detail.

The majority of the route crosses publicly held land: Thirty-one percent crosses land administered by BLM; 27 percent crosses land administered by NPS; and 5 percent crosses land administered by state agencies, such as the CDFG, the State of Nevada/Colorado River Commission, and the New Mexico State Lands Office.

The remaining 37 percent of the route is on privately owned land. The project area crosses four counties: Socorro County in New Mexico, Clark County in Nevada, and San Bernardino and Kern Counties in California.

The land use of the coaxial cable right of way is usually consistent with the adjacent land uses, given there are no physical barriers or impediments to block access to the easement. The predominant land uses of the coaxial cable right of way and adjacent areas are range, open land, wilderness areas, recreational areas, and transportation routes (BLM 1980, 1988, 1989b, 1994; Kern County 1994; San Bernardino County 1986; Socorro County 1995). The repeater hut sites are only used by AT&T. Use of the access corridor is discussed separately in the Transportation section.

The project area is primarily located in remote portions of California, Nevada, and New Mexico, and does not cross any substantially urbanized areas. The route crosses near some limited residential areas near Yermo and California City and several small areas of rural residences, such as in Aerial Acres, in California (USGS 1970-1988). No residential areas are along the project area in Nevada or New Mexico; only public and state lands are crossed.

Because the project area is in arid portions of California, Nevada, and New Mexico, there is little substantial agricultural activity in the project area. Field surveys in California identified one agricultural area crossed by the project area. This agricultural area contains a fallow field (MP 7399 to MP 7404) and an alfalfa field (MP 7404 to MP 7414). There are extensive areas of rangeland in all three states on both public and private land along the project area. While there is no obvious mining activity on the right of way, some mining activities on public lands adjacent to the project area are accessed via the access corridor. Mining claims records were not examined concerning the right of way or access corridor, thus it is possible that valid claims may exist. However, there are no obvious physical signs of active mining claims on the right of way.

No tribal lands are crossed by the project area. The Nevada portion crosses approximately 1.5 miles north of the Fort Mojave Reservation (USGS 1970-1988). A discussion of cultural resources that may be of concern to Native American groups in the general vicinity of the project is presented earlier. The project area does cross several special management areas, such as wilderness areas and areas of critical environmental concern, and these are discussed in the following section.

**Special Management Areas**

**Wilderness Areas.** In New Mexico, the project area does not cross any designated wilderness or wilderness study areas (BLM 1989b). There are no designated or proposed wilderness or wilderness study areas in the Clark County, Nevada, portion of the project area (BLM 1994).

In California, the project area crosses approximately 8.1 miles of the Mojave Wilderness in the Mojave National Preserve (CDPA 1994b). The project area is also adjacent or nearby to approximately 26.4 miles of the Mojave Wilderness, adjacent to 1.7 miles of the Soda Mountains Wilderness Study Area (WSA), and adjacent to 2.3 miles of the Black Mountain Wilderness (CDPA 1994b). As shown on Figure 3-4, in some areas, the project area is adjacent to two separate parts of the Mojave Wilderness simultaneously (as in the Mid-Hills area) because it follows a nonwilderness corridor. Table 22 summarizes the areas where the project area crosses or is adjacent to designated wilderness areas.

**Other Special Management Areas.** In New Mexico, the project area crosses one BLM special management area (SMA), The Box, an area known nationally and internationally for its rock climbing opportunities (BLM 1989b). The project area crosses approximately 1,000 feet east of Box Canyon, which is the center of rock climbing activities in the SMA. The project area does not cross the climbing area itself; it crosses the adjacent area around the canyon (BLM 1989b).

In Nevada, the project area crosses the Mojave Road, a road with historical significance (BLM 1994). This road has been proposed for designation as a National Historical Trail. The project area also crosses a small portion of the proposed Piute/Eldorado Valley Area of Critical Environmental Concern (ACEC)/DWMA, which is being considered for protection of desert tortoise (BLM 1994).

In California, the project area crosses two general management areas: Mojave National Preserve, administered by NPS; and the CDCA, administered by the BLM. In California, the project area also crosses near several special management areas designated by the BLM within the CDCA (BLM 1980; CDPA 1994).

Because the NPS is developing its management plan for the Mojave Preserve, there are no special management areas currently designated within the preserve. As a point of reference only, the project area crosses adjacent to three formerly designated BLM ACECs within the preserve: Fort Piute, New York Mountains, and Camp Rock Springs. All three of these areas were included in areas designated wilderness by the 1994 CDPA. In addition, the project area crosses the Mojave Road (also identified on maps as the Old Government Road) at least six times within the preserve (Casebier 1987; BLM 1978, 1979, 1980, 1988b, 1988c). The Mojave Road, which has historical significance due to its use by Native Americans, Spanish explorers, American pioneers, and the U.S. Army, has been proposed for a National Historical Trail (Casebier 1987).

In BLM areas of the CDCA, the project area crosses nearby the Rainbow Basin/Owl Canyon ACEC and adjacent to the Black Mountain ACEC, which was included in the Black Mountain Wilderness designated in 1994 (BLM 1980; CDPA 1994). Table 23 summarizes the special management areas in the project area.

The project area does not cross any local, county, or state parkland, although it does cross 4.1 miles of land administered by the CDFG for desert tortoise habitat. The route does not cross any waterway listed under the National Wild and Scenic River Act (16 USC 1271), or any state wild and scenic river.

### Recreation and Public Interest Areas

A large portion of public land crossed by the project area is used for recreation, although given the expanses of public land and the relative remoteness of most of the coaxial cable route, the intensity of recreational use in any one area is generally low. Recreational uses include hiking, camping, backpacking, biking, hunting, wildlife observation, rock climbing, amateur rockhunting, and four-wheel-drive vehicle travel, among others (BLM 1980, 1988c, 1989b, 1994; Foster 1987).

In New Mexico, the project area crosses areas used for hunting, rock climbing, hiking, and dispersed recreation (BLM 1989b). As mentioned above, Box Canyon is an area specially managed because of significant rock climbing opportunities. The land crossed by the project area in Nevada is apparently used for dispersed recreational activity (BLM 1994).

As shown in Table 23, the project area crosses 8.1 miles of the Mojave Wilderness within the Mojave National Preserve and is adjacent to, or nearby, wilderness for another 26.4 miles (CDPA 1994b). Wilderness areas are reserved for nonmotorized, recreational activity, such as hiking, backpacking, and wildlife observation. The nonwilderness areas within the preserve are also used for recreation. There are no open areas within the preserve for off-road vehicle play. One of the more heavily used recreational areas near the project area is the Mid-Hills area, which includes campgrounds at Mid-Hills and Hole-in-the-Wall. Nearby Wildhorse Canyon and trails are also heavily used (Foster 1987). The project area is several miles north of these popular campgrounds. As mentioned above, the Mojave Road is crossed at least six times within the preserve (Casebier 1987). The Mojave Road is a historical trail popular for four-wheel-drive travel.

Recreation in the Black Mountain Wilderness Area and the Soda Lakes Wilderness Study Area is similar to that discussed above for the Mojave Wilderness. The Rainbow Basin National Natural Landmark is a popular hiking and camping area (BLM 1980). The nonwilderness BLM areas are also open to a wide range of desert recreational activity.

## TRANSPORTATION AND UTILITY CORRIDORS

### Traffic Routes and Level of Service

The project area is served by a system of roads that are part of a regional and interstate system. In the California/Nevada area, the major transportation corridors bounding the project area are I-15, I-40, U.S 95, and U.S 395. Near Socorro, New Mexico, these corridors are I-25 and U.S. 60. I-15, I-40, and I-25, which are multi-lane highway systems with uninterrupted flow. These corridors are the primary transportation routes for the movement of people and goods through the project regions.

The project route crosses federal and state highways, numerous county roads, and numerous unnamed and unmaintained dirt roads in remote areas. Named roadway crossings and their characteristics are summarized in Table 24. As shown in Table 24 most of the highest annual average daily trips (AADT) are recorded on U.S. highways and routes. AADT reflect the total daily traffic movements, in both directions, averaged over a given year. The highest AADT for a roadway crossed by the project is on I-15 between Barstow and Baker at approximately 25,500 AADT. Other high-volume roadways in San Bernardino County include Fort Irwin and Irwin Roads, north of Barstow. They have AADT counts of 4,459 and 3,950, respectively. These arterial roadways provide access to Fort Irwin Military Reservation.

Other non-federal roadways with AADT above 1,000 include California City Boulevard and Clay Mine Road between SR 58 and California City and River Road (Needles Highway) between Laughlin, Nevada, and Needles, California (Kuhlman 1997; Manning 1997; Pena 1997).

Roadways crossed between MP 6105 and MP 6537 (see Table 24) are within the Mojave National Preserve. Kelbaker, Kelso-Cima, and Lanfair/Ivanpah Roads are arterial roads that transect the preserve and provide access to the regional transportation network. Cedar Canyon Road is an east-west collector road that provides access between the preserve's arterial roadways. All other roadways in the preserve are non-classified or described as "other."

Traffic count collectors at the entrances to the preserve between May 1996 and April 1997 recorded an AADT volume of 498. Two-way traffic counts were collected at the north and south entrances on Kelbaker Road, Cima Road southbound, Essex Road northbound, and the north and south entrances on Ivanpah/Lanfair Road. Approximately 35 percent (176 trips) of visitors enter the park from the south entrance on Kelbaker Road off I-40, and 33 percent (149 trips) enter from the north entrance on Ivanpah Road off SR 164, near Nipton. AADT recorded at the entrances of the preserve near and north of Baker were 57 each. At the preserve, vehicle trips recorded near to the project area are highest on Kelso-Cima Road at 188 AADT (Moore 1997).

In the project area, roadways are classified to operate at a level of service (LOS) "C," defined as a stable rate of traffic flow. The LOS is a qualitative measure of capacity that indicates the characteristics of a roadway by assigning a letter ("A" through "F") to describe its design or operating capacity. An LOS of "A" indicates a free-flow condition; an LOS of "F" indicates a breakdown in traffic flow gridlock. The operating LOSs for roadways crossed by the project were determined with generalized LOS tables using existing AADT volumes and roadway characteristics. All roadways crossed by the proposed project are operating at LOS "C" or better; most are operating at LOS "B."

Traffic safety conditions are dependant on numerous factors; roadway condition is a primary concern. Roadway safety factors include the composition of the roadway and surrounding development, lane width and shoulder clearance, design speed, and horizontal and vertical alignment (i.e., topography). For maintained roadways, safety conditions are expected to meet the design and maintenance standard of the responsible government entity. The safety conditions of unmaintained roads may be suspect, and unmaintained dirt roadways may present the most safety concerns.

**Utility Crossings**

The project area crosses one railroad, a number of underground pipelines including the CalNev petroleum products pipeline, and telephone and utility lines. In New Mexico, aerial transmission lines are crossed in three places. In Nevada, the project area is parallel to one underground pipeline and crosses aerial powerlines in three places. In California, several underground pipelines are crossed, including a Calnev petroleum products pipeline and a Pacific Gas and Electric Company (PG&E) pipeline. The project area also runs parallel to several pipelines for several miles. The only railroad crossing identified is the Union Pacific Railroad line near Cima (MP 6324). Numerous telephone and power utilities are crossed in California. The highest density of crossings is along the U.S. 15 utility corridor, from Baker to Barstow. Table 25 lists the identified utility crossings.

**Access Corridor**

The access corridor that parallels the coaxial cable right of way is part of a transportation network used to reach both public and private lands along the route. Most of the access corridor was apparently constructed around the time of the cable installation in 1963. In certain areas where there were pre-existing roads along the intended route of the cable, there was no need to construct a corridor. Based on a review of aerial photographs and historic USGS topographic maps, 36.1 miles of road along the present cable route existed prior to cable installation. These pre-existing segments are identified in Appendix D. The remainder of this section presents a brief overview of the physical state, ownership, and existing uses of the access corridor today. There is no access corridor along the New Mexico segment. A detailed summary of access corridor information is presented in Appendix D.

**Physical State.** Based on the length of the adjacent coaxial cable right of way, the access corridor is present along 212.5 miles of the project area. The access corridor is parallel (within 50 feet) to the cable right of way for almost all of the project area. The corridor and coaxial cable right of way only diverge (beyond 50 feet) over several small segments totaling 12.4 miles. These areas of divergence are identified on the project resource maps in Appendix A and a table in Appendix D. The most significant areas of divergence are in the Piute Range in the eastern part of the Mojave National Preserve, where the coaxial cable right of way and access corridor diverge by up to 995 feet, and east of U.S. 395, where divergence is up to 600 feet. The access corridor consists of dirt/gravel for its entire length, with no paved segments. One 4-mile segment near California City (MP 7683 to MP 7708) is oiled.

It is apparent that some maintenance of the corridor has been performed. The access corridor is not designated as a county or local road anywhere along the project area, although segments of the access corridor are mapped or referenced on recreational maps and desert access guides, and the BLM has placed signs on the corridor in certain locations. The BLM has designated the corridor as open route EF401 from Fossil Bed Road west to Black Canyon Road. The driving conditions on the access corridor vary considerably from hard-packed dirt/gravel areas easily traversed by two-wheel drive vehicles with normal clearance, to areas of soft sand, rock, or steep slopes where high-clearance and four-wheel-drive are required. In some segments, the access corridor is extensively washboarded. As a result, users of the road have veered off the access corridor, and dual tracks have developed because of vehicle traffic. These dual tracks are in various states of use, and driving conditions depend on the relative condition of the access corridor. Approximately 18.6 miles of the access corridor has dual tracks, and these areas are identified in Appendix D.

The access corridor intersects the roads identified in Table 24 in Nevada and California, in addition to numerous other unnamed dirt roads. The access corridor is parallel to public roads for approximately 88.6 miles (see Appendix D). In areas without parallel public roads, the access corridor provides the sole route of travel.

**Ownership.** Ownership of the land underlying the access corridor is the same as ownership of the land underlying the adjacent coaxial cable right of way, except for 7.5 miles where AT&T has roadway authorization. Specific authorization is granted in areas where the access corridor had to deviate from the generally straight-line coaxial cable right of way.

**Existing Uses of the Access Corridor.** Apart from AT&T maintenance patrols, the access corridor is used to reach recreational areas, access grazing areas, or access private inholdings. Based on a review of BLM Desert Access Guides, topographic maps, recreational plans, and other available reference materials for the project area, approximately 42.7 miles of access corridor provides sole access to wilderness areas and several other recreational sites (BLM 1978, 1979, 1988b, 1988c, 1989b, 1994; USGS 1970 - 1988; Casebier 1987; Foster 1987; Harrison 1996). These segments of the access corridor and the recreational sites accessed are listed in Table 26. Although the access corridor crosses parts of the Mojave Wilderness, vehicle access is prohibited to the public because of the wilderness designation.

Approximately 38 percent of the right of way in California is on private land. As a consequence, the access corridor is used by private landowners for sole and secondary access to properties on and near the project area. A field survey identified approximately 4.0 miles of the access corridor on federal land where specific private landowners use the access corridor as the sole road to their properties. These access corridor segments and the private lands they provide access to are listed in Table 27. No public roads are parallel to the corridor for approximately 146 miles. In these areas, the access corridor apparently provides recreational and other access. Dispersed public and park system lands in the desert are used for a great variety of recreational pursuits and the access corridor can be used to reach undesignated public lands along the project area. Private landowners also apparently use portions of the access corridor not parallel to public roads as secondary routes of access to lands along, or near, the project area. The corridor is also apparently used as secondary access to grazing lands along the project route. The segments of the access corridor used to reach open desert lands for recreation and for secondary access to grazing areas and private lands are listed in Table 28.

## VISUAL AESTHETICS

### Aesthetic Setting

The Mojave Desert within Nevada and California has multiple landforms, including valleys, bajadas, alluvial fans, mountain ranges, washes, and dry lake beds. As discussed in the Land Use section, the primary land uses along the project area are range, open land, wilderness areas, recreational areas, and transportation. The project area in New Mexico crosses a portion of the Chihuahuan Desert with desert scrub and grassland, in addition to a small portion of canyon bottom. Land uses along the New Mexico segment include range, open land, recreation, and mining.

There are significant scenic natural areas along, or adjacent to, the project area, particularly in California, as reflected by the designation of numerous natural areas as Wilderness or Wilderness Study Areas, National Natural Landmarks, or ACECs, or by their inclusion in the Mojave National Preserve. Recreational areas along the project area, most of which contain significant scenic values, were discussed earlier. Given the interspersing of private lands within many of the publicly managed lands in California, many of the private lands may have significant scenic values shared with adjacent public lands.

The existing coaxial cable right of way, MPs, repeater huts, and access corridor are all visible features of the coaxial cable system. The coaxial cable right of way, as a linear feature, varies from highly visible to partially obscured depending on the level of disturbance and the amount of natural revegetation to date. The cable mound itself is not as apparent as the contrast in vegetation between the coaxial cable right of way and adjacent vegetation. The MPs are highly visible due to their height. The repeater huts, because of their vertical man-made rectangular form, are visible from a distance in open areas. The access corridor, where it is sufficiently used to maintain a clear unvegetated track, is a highly visible linear feature of the local landscape. Photographs of the coaxial cable right of way, a repeater hut, and the access corridor are presented in the introduction.

Desert rock exposed to air and sunlight often develops a "desert varnish" due to oxidization of iron and magnesium on the rock surface. Iron and magnesium oxides will form a surface stain or crust, of brown or black color, usually with a glistening luster. This "varnish" can coat ledges of rock in place, as well as boulders and pebbles scattered on the surface of the ground. In places along the project route, rocks dislodged during the original cable installation are observable. These rocks are usually noticeable by size, but may also contrast in color, depending on local rock conditions. The visual contrast of dislodged rocks is very low due to the presence of other natural rock in the vicinity, the variability in natural rock color, and due to the amount of revegetation that has occurred along the right of way since the original installation.

The project area is visible from many of the scenic and publicly used areas that are crossed, adjacent, or nearby, including the following: New Mexico — Box Canyon; California — the Mojave National Preserve, including more than 30 miles of the Mojave Wilderness, and scenic areas within BLM land in the CDCA, including the Soda Mountains, the Cronese Lakes, Rainbow Basin/Owl Canyon, and the Black Mountain Wilderness, among others.

The general management plan for the Mojave National Preserve, which is currently under development, will include visual resource management guidelines for the Preserve. The BLM uses its Visual Resources Management (VRM) system to evaluate scenic values. The VRM system classifies scenic resources, identifies visual quality objectives, and develops management policies for the administration of these resources on BLM land. Based on this evaluation, areas are designated within four VRM classes with different management objectives. BLM goals for the three VRM classes crossed by the project are as follows: Class II - retention of the existing character of the landscape with a low level of change; Class III - partial retention of the existing character of the landscape with a moderate level of change; and Class IV - provide for activities which require major modification of the existing character of the landscape with a high level of change (BLM 1989b).

The BLM has used the VRM system to classify visual resources in the project area in New Mexico, Nevada, and California. In New Mexico, the project crosses BLM areas in VRM Class IV (BLM 1989b). In Nevada, the project crosses BLM areas in VRM Class III (BLM 1994). In California, the project crosses current BLM areas and lands within the Mojave National Preserve that are within VRM Classes II, III, and IV.

Scenic values on private lands are not specifically inventoried in the San Bernardino or Kern County General Plans, but are presumed to be similar to those of surrounding NPS or BLM lands, though perhaps they are somewhat modified by private developments. The New Mexico State Lands Office (NMSLO) and the Colorado River Commission in Nevada have not inventoried their lands within the project area for scenic values, although the lands are likely to be similar to adjacent public lands.

## HAZARDOUS MATERIALS AND SAFETY

### Coaxial Cable

The coaxial cable is constructed of copper wires within a protective lead casing, covered by a stainless steel outer layer and polyethylene sheath. For most of the route, it is buried 4 to 5 feet below ground surface (bgs); in limited areas, it is buried to 12 feet bgs.

Copper and lead are naturally occurring metals that may be toxic to humans or other animals when dust or particle compounds or soluble metals are inhaled or ingested in excessive levels. In a solid form, lead and copper do not pose any hazard to human health or the environment.

Copper wires are encased within layers of steel, wax, and lead. The lead is encased within the stainless steel outer layer and the polyethylene sheath. Because of this protective layering of the coaxial cable, the formation of dust or particles, or soluble leachate from the copper wires or the lead casing, is unlikely.

If the solid copper or lead were exposed directly to the environment, conditions that could influence the solubility of the copper or lead include acidity (i.e., low pH) and soils with a high moisture content — conditions that are not typical of the project area (Kabata-Pendias 1984). Also, soils in the project area are high in calcium and magnesium carbonates and hydrous oxide compounds that could combine with lead to form insoluble compounds that would be immobile in the environment.

A December 1996 investigation of a property in Thousand Oaks, California, indicated that an AT&T coaxial cable identical to the P140 cable had not affected site soils. During the investigation, a backhoe was used to expose the cable and then to collect soil samples from beneath the cable. Eight samples were collected from 3 to 11 feet bgs along the route of the cable through the site; an off-site, background soil sample was collected from 2 feet bgs. The soil samples were analyzed for total lead following EPA Method 6010. Total lead concentrations in samples collected beneath the cable ranged from 2.9 to 14 milligrams per kilogram (mg/kg); the mean concentration was 6.0 mg/kg. The lead concentration found in the single off-site sample was 4.6 mg/kg. These values are consistent with expected naturally occurring levels of lead, and are orders of magnitude below Cal-EPA's action level for residential settings (130 mg/kg) and EPA's preliminary remediation goals for residential settings (400 mg/kg) (Lake Engineering 1997).

### Repeater Stations/Manholes

Equipment remaining in the repeater huts and manholes includes light fixtures, ladders, and cable racking and electronic equipment (Gorman 1997). None of the material housed in the repeater huts and manholes is classified as a hazardous material.

### Right of Way

As part of maintenance for the originally installed coaxial cable right of way, AT&T has conducted periodic surveys for any encroachment or intrusions that could affect the functional capability of the line. Based on these surveys, AT&T is not aware of any hazardous waste sites or areas used for illegal dumping along the right of way. Maintenance of the right of way has not involved any use of hazardous materials.

### Valley Fever

The coaxial cable right of way is located in a geographic area endemic for valley fever (Coccidioidomycosis), a disease contracted through exposure to fungal spores in the dust of alkaline soils of the southwest. The general endemic area includes the San Joaquin Valley and other parts of southern California; western Texas; southern and central Arizona; and southern parts of New Mexico, Utah, and Nevada. Kern County, California, represents one of the areas of highest endemicity. The spores grow in the top 1 inch of soil, although they can be found as deep as 6 inches depending on conditions and temperatures. Although soils can be tested for the fungus, the results are highly variable because it tends to grow in small, spotty areas.

Contraction of the disease produces variable results. In most cases, individuals do not develop any symptoms and are not aware of having contracted the disease. Symptoms are typically flu-like symptoms — fever, aches, and coughs — lasting 1 week to 4 weeks. A more serious form of the disease occurs in approximately 1 percent of the white population contracted, and in 10 to 20 percent of the darker-skinned population contracted. It is exhibited by high fever and extreme fatigue. Individuals infected by the disease then develop an immunity to the disease (Jinadu 1995).

## SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section addresses the socioeconomic environment in proximity to the project route. The text provides a summary of relevant regional and local socioeconomic conditions and evaluates the presence of minority and low-income populations in accordance with environmental justice concerns. Generally, the most current socioeconomic data are only available at the county level; therefore, for sub-county areas, the data collected include a combination of current data (when available) and 1990 census data. Areas include the Cal/Mojave, Baker, and Laughlin regions and the cities of Barstow, Bullhead City, and Socorro.

**Population, Employment, and Housing**

**New Mexico.** The town of Socorro's population in 1994 was 8,472, with a county population of 15,690 (Socorro City 1997). The county covers an area of 6,625 square miles. Within a 30-mile radius of Socorro, the racial and ethnic breakdown was 92.7 percent white, 0.8 percent black, 1.8 percent Asian, and 4.7 percent other race. Hispanic origin (of any race) was 52.4. (Socorro City 1993). In 1996, the civilian labor force for the county included 6,414 people, unemployment was 9.1 percent. Within a 30-mile radius of the city, 67.1 percent of the housing units are owner-occupied; no vacancy data are available (Socorro City 1997).

**California/Nevada.**

*Clark County, Nevada* — The land area of Clark County is 7,881 square miles. Approximately 66 percent of the state's population (1,119,708 people) live in Clark County; the majority live within the Las Vegas Valley Urban Area. In 1990, the racial and ethnic mixture of the county was 75.4 percent white, 9.3 percent black, 0.7 percent Native American, 3.3 percent Asian, and 0.1 percent other races. Hispanic origin (of any race) was 11.2 percent. As of 1997, the labor force in the Las Vegas MSA was 660,500, employment was 628,792, and the unemployment rate was 4.8 percent. Housing units available in the county as of 1997 totaled 449,910; the vacancy rate was 9.7 percent (Verkaaik 1997).

Approximately 45,300 people live outside the Las Vegas Valley Urban Area, and about 8,100 live in the unincorporated Laughlin area, 95 miles south of Las Vegas. According to 1990 census data, the racial and ethnic mixture in Laughlin was 94.8 percent white, 0.8 percent black, 1.0 percent Native American, 1.2 percent Asian, and 2.1 percent other. Hispanic origin (of any race) was 8.2 percent. The Laughlin area employs about 14,000 people, most of whom live in Bullhead City, Arizona. In 1996, there were 7,987 housing units in the area; the vacancy rate was 9.6 percent (Verkaaik 1997).

Bullhead City, Arizona, comprises 43 square miles with a 1995 population of 26,940. According to 1990 census data, the racial and ethnic mixture was 95.6 percent white; less than 1 percent black, Native American, and Asian; and 2.4 percent other. The population of the Bullhead City trade area (includes Mojave County) is about 144,000. The civilian labor force in 1995 was 15,582, employment was 14,485, and the unemployment rate was 7.0 percent (Arizona Department of Economic Security 1997).

*San Bernardino, California* — The land area of the county is 20,064 square miles. Residential population in 1996 was estimated at 1,589,500 (SBDECD 1996). The 1990 racial and ethnic mixture of the county was 73.0 percent white, 8.1 percent black, 3.9 percent Asian, 1.0 percent Native American, and 13.6 percent other. Hispanic origin (of any race) was 13.6 percent. As of 1997, the county's labor force was 710,000, employment level was 667,000, and the unemployment rate was 6.1 percent (CEDD 1997b). Housing units in the county in 1995 totaled 584,493; the vacancy rate was 13.63 percent (SBDECD 1996).

Barstow's 1996 population was 22,850. The city's land area covers 33 square miles. The racial and ethnic mixture of the city is 72.0 percent white, 7.7 percent black, 2.7 percent Native American, 2.2 percent Asian, and 15.6 percent other. Hispanic origin (of any race) was 29.8 percent. Available labor force is 12,500 people (Hagers 1997). No unemployment data are available. Housing units in 1995 totaled 8,670; the vacancy was 9.0 percent (SBDECD 1996).

Baker is an unincorporated, service-district area covering approximately 3,500 square miles. The town of Baker is approximately 5 square miles with a population of approximately 527 (Dougherty 1997). Although no current statistical socioeconomic data are available for the Baker region at the local, county, or state level, conversations with personal from the Baker Chamber of Commerce, San Bernardino Department of Economic and Community Development and the Baker Community Service District provided general information about the area. The racial and ethnic mixture is estimated to be 53 percent white, 45 percent Hispanic, 1 percent Asia-Pacific, 1 percent black (Dougherty 1997). Business are primarily convenience and travel-by oriented, and the number of housing units is insufficient to support the local working population; the vacancy rate is 0 percent. (Fisher 1997; Ramirez 1997; Dougherty 1997).

*Kern County, California* — The land area of Kern County covers 8,310 square miles. The estimated residential population in 1994 was 617,000. Approximately 284,000 of the residents lived in unincorporated areas. The racial and ethnic breakdown of the population was 64 percent white, 26 percent Hispanic, 6 percent black, and 4 percent Asian and other (KCEDC 1995). As of April 1997, the county's labor force included 289,800 people. The employment level was 256,300, and unemployment was 11.6-percent (CEDD 1997a). There were 225,368 housing units in the county in 1997, the vacancy rate was 8.59 percent.

The California City/Mojave Region (Cal/Mojave) had an estimated population in 1996 of 19,000. The region includes the cities of Mojave, California City, North Edwards, and Boron. California City has a little less than one-half (8,758 people) of the area population (Smith 1997). According to 1990 census tract data, the racial and ethnic mixture of the area is 89.9 percent white, 2.9 percent black, 1.5 percent Native American, 2.7 percent Asian, and 3.0 other. Hispanic origin (of any race) was 6.6 percent (Smith 1997). As of 1997, the labor force for the Cal/Mojave area was 6,580 people, employment level was 5,730, and unemployment was 8.5 percent (CEDDa 1997). In 1990, there were 1,569 housing units, and the average vacancy rate was about 12 percent (Smith 1997).

**Taxes and Revenues**

**New Mexico.** The City of Socorro has a mayor, an eight-member city council, and a city clerk. The county functions with a county commission and county manager. For fiscal year 1995-1996, total revenues for the city were $3,255,469 and $7,069,147 for the county (Socorro City and Socorro County 1997). Gross receipt tax within the city limits is 6.0 percent and 5.56 percent within the unincorporated county. Of the gross receipt taxes within city limits, 4.5 percent is allocated to the state, within the unincorporated county 5.0 percent is allocated to the state. In Socorro County, property and improvements are taxed separately. The assessed value for each is 0.333 percent of the full market value. The dollar rate at which property is taxed per $1,000 of the assessed valuation is determined by school district. The average rate in the unincorporated areas is $22.12 per $1,000 of assessed valuation.

**California/Nevada.**

*Clark County, Nevada* — Government functions in Clark County are implemented through a seven-member Board of County Commissioners, an elected chairman, and a county manager. Over the previous 10 fiscal years, government revenues have increased more than 200 percent. For fiscal year 1995-96, revenues totaled $859,524,554 (Williams 1997). Sales and use tax in the county is 7 percent. Of the 7 percent, Nevada's sales/use tax rate is 6-1/2 percent, with the additional 0.5 percent county option tax imposed in 0.25 percent increments. Property tax is assessed at 35 percent of the

cash value of the property and improvements. In the Laughlin area, property tax is $3.0568 for each $100 assessed valuation.

*San Bernardino County, California* — San Bernardino County functions under a charter form of government with five district board members whose responsibilities as the Board of Supervisors are to enact ordinances, resolutions, and orders necessary for governing the county. General government revenues by source have steadily increased over the previous 10 fiscal years. Revenues for fiscal year 1995-96 were approximately 1.48 billion dollars. Aid from other government agencies (state and federal) accounted for 66.3 percent of this revenue. Other major revenue sources were property taxes (15.7 percent) and charges for current services (10.7 percent) (San Bernardino Comprehensive Annual Report 1996). The county sales/use tax is 7.75 percent, with 6 percent of the revenues allocated to the state. Property tax is 1.25 percent of the purchase price or assessed value of the property and its improvements. The county automatically increases the assessed value of property at a rate of 2 percent per year.

Sales and use tax in the City of Barstow is 7.75 percent. Revenue generated by the sales/use and transit lodging taxes accounted for 56.5 percent of the total $9,696,239 revenues received by the City of Barstow for fiscal year 1995-96 (Malo 1997).

*Kern County, California* — Kern County functions under a general law form of government, with five district board members whose responsibilities as the Board of Supervisors are to enact ordinances, resolutions, and orders necessary for governing the county. Financing sources for fiscal year 1996-1997 final budget amounted to $682,496,140. Major revenue sources include state aid at 39.8 percent, federal aid at 20.2 percent, property taxes at 15.1 percent, and service charges at 11.9 percent. Other taxes account for 3.1 percent, or $21,143,381 of the total budget (Richert 1997). The Kern County sales/use tax is 7.25 percent, with 6 percent of the revenues allocated to the state. Property tax is 1 percent of the purchase price or assessed value of the property and improvement, plus any special district assessments.

**Recreation and Tourism Economics**

**New Mexico.** Although tourism contributes significantly to the Socorro economy, the economic base of the area is not totally dependant upon tourism dollars for its vitality. Scientific research, defense programs, agriculture, and the New Mexico Institute of Mining and Technology are the base of the economy. Most tourism is associated with Socorro and its retail trade or outdoor recreation destinations, such as Gila National Forest, Box Canyon, and Bosque del Apache National Wildlife Refugee. Annual visitation is upward to 100,000 people at the Wildlife Refugee. There are 10 motels with more than 350 rooms in the area (Socorro City 1997).

**California/Nevada.** Tourists and recreation visitors to the proposed project region are either traveling to or through the project area. Much of the travel through or within the project region occurs on I-15. The 1995 average daily, two-way traffic volumes on I-15 were 45,000 before the I-15/I-40 split, 33,500 north of Barstow and 30,300 at State Line, Nevada. The two-way traffic volume is about 50/50 in each direction.

Recreation and tourist locations outside the immediate project area, which draw a large number of visitors through the area are Las Vegas, Lake Mead National Recreation Area (including Lake Mojave), Laughlin/Bullhead City, and the Colorado River (Anderson 1997). In 1996, 29.2 million

people visited the Las Vegas area. According to the Las Vegas Convention & Visitors Authority, 40 percent of the visitors are from Southern California; therefore, the daily average two-way passenger volume of Southern Californians traveling I-15 is approximately 64,000. The results of a study conducted by the Baker Improvement Group showed that for every person traveling the I-15 corridor, defined as the area from Cajon Pass south of Victorville to State Line Nevada (about a 3-hour drive), $5 per person is spent within the corridor (Anderson 1997). Based on these statistics, travel by Southern Californians to or from Las Vegas generates approximately $320,000 daily for the local economies along the I-15 corridor. Survey data show that the average vehicle occupancy rate for these tourist is 3.06 people, which amounts to a two-way vehicle trip volume of 20,915 (Anderson 1997). This is about 69 percent of the average daily, two-way vehicle trips recorded at State Line (30,300).

Another 9,385 vehicle trips are also occurring along the corridor. These trips could be for business, recreation, or tourism not included as trips to Las Vegas. If an average vehicle occupancy rate of 2.1 is used, these additional vehicle trips generate an additional $98,500 dollars spent along the I-15 corridor ($5 per person). Therefore, the average daily travel dollars spent along the I-15 corridor is estimated to be about $427,000.

Although Barstow and the Baker area vie for their share of travel dollars spent along the I-15 corridor, Baker is more dependent upon travel dollars than is Barstow. While travel dollars are important to Barstow's economy, they are only part of the economic base of the community. Barstow area employers employ about 10,000 civilian personnel and about 5,000 military personnel not directly linked to the retail/service/tourism trade. For the traveler, Barstow has about 1,674 hotel rooms. The average hotel has a 50 to 60 percent occupancy rate; the upper-end-priced hotel rooms generally have an 80 percent occupancy rate (Hagers 1997). Baker, on the other hand, is almost completely dependent on tourism/travel dollars. Businesses are primarily convenience/service-oriented, specializing in inexpensive dining, convenience and automotive retail, and (to a limited extent) lodging. There are three motels in Baker with 75 to 80 rooms. Occupancy is generally high and the motels sometimes receive overflow patrons from Las Vegas (Dougherty 1997).

The most significant recreational destination within the project area is the Mojave National Preserve. With more than 1.4 million acres, the preserve is bounded by I-40 to the south and I-15 to the north, and has its western boundary 60 miles east of Barstow. Visitor activities at the Mojave National Preserve include hiking, camping (both backcountry and at established campgrounds), sightseeing, hunting, and four-wheel-drive travel. Two established campgrounds are within the preserve: Hole-in-the-Wall and Mid-Hills. Visitors to the preserve between January 1997 and April 1997 ranged from 18,346 to 38,882 per month, or 126,237 visits over a 4-month period. Over the same 4-month period, 4,331 visitors stayed overnight at the preserve, 3,754 of whom were in established campground areas. In addition, there were approximately 13,500 visitor at the preserve's visitors' center in Baker. No entrance fees are charged at the preserve.

The eastern edge of the project area is the Bullhead City/Laughlin travel destination area. Tourism is a primary activity, attracting more than 6 million visitors in 1995. With 11 major casino/hotels in Laughlin, gambling gross revenues in 1996 were more than $500 million (Verkaaik 1997). Laughlin's casinos/resorts include nearly 12,000 rooms, with an average occupancy rate of 90 percent. More than 1,780 additional rooms are available in Bullhead City. The area also has mobile home parks and recreational vehicle parks at more than 2,400 sites. Besides casinos/resorts, area attractions include Lake Mead Recreation area (including Lake Mojave), the Black Mountain Range east of Bullhead City, and the Havasu National Wildlife Refuge south of Bullhead City (Bullhead City Chamber of

Commerce 1997). Tourism/recreation visits are highest in the summer and fall; during the winter and spring months, most visitors are retirees (Anderson 1997).

Tourism destinations in the Cal/Mojave area are relatively limited. Population employment is more dependant on aerospace and mining industries than tourism and recreational dollars. Major employers in the area include Edwards AFB, U.S. Borax, and Mojave Airport.

**Environmental Justice**

Minority and low-income populations were identified in accordance with guidance prepared by a task force of the Interagency Working Group on Environmental Justice (IWG) created by Executive Order 12898. Census tract, census block, and census designated place data for 1990 were used for identifying minority and low-income populations. Eight geographic areas were evaluated for minority and low-income populations. The data were analyzed with respect to IWG numerical guidelines and professional judgement and sensitivity. Because census boundaries tend to include large geographic areas in sparsely populated areas, the socioeconomic data collected includes areas somewhat removed from the actual affected area. Because the socioeconomic factors and conditions are similar throughout these geographic areas, the data reflect the socioeconomic characteristics of the affected area.

Using the IWG guidelines, which state that a population must be 50 percent non-white to be a minority population, a minority population was identified for the project area southwest of Socorro, New Mexico. This area has a 60 percent minority population; 80 percent are of Hispanic origin. The minority populations in the project areas in California and Nevada are between 7.9 percent and 45.5 percent. The minority percentages in these other affected areas are not meaningfully greater than the minority percentage when compared to their respective counties.

Low-income populations in the affected areas were identified by census tracts using the statistical poverty thresholds from the Bureau of Census. For this report, low-income populations are defined as populations that have poverty levels that exceed the county poverty levels by more than 5 percent. No areas along the Proposed Action met the definition of a low-income population, as described above. In all but three areas, the percent of the population under the poverty threshold was less than the overall county percentage. The approximate percentage of population under the poverty threshold in the project areas in California and Nevada was between 9.0 percent and 14.9 percent. The Socorro area exhibited the highest poverty percentage along the project area — 29 percent. This percentage is consistent with the county's poverty rate. It exceeds the New Mexico state rate of 20.6 percent.

Other socioeconomic indicators used to evaluate the presence of low-income population and communities included earnings per household and public assistance income. Low-income households areas were defined as those where 50 percent of the households in an area earned less than two-thirds of the county median household income. Although no areas were identified as low-income using this criteria, much of the project area had 30 to 40 percent of the households earning less than two-thirds the county median household income. The number of persons receiving public assistance was considered significant if the percent of persons receiving assistance in the project area exceeded the county's rate by more than 5 percent. In Barstow and census tract 119 (north of Barstow) the percent of population receiving public assistance exceeds the county's rate of 12.7 percent. The percentage rates in these two areas were less than 5 percent above the county's rate.

Based on the analytical results presented above, no low-income populations were identified, and only one minority population was identified near Socorro, New Mexico. While no area meets both the

minority and low-income population criteria, some areas are less affluent and more racial and ethnically diverse when compared to the county or other project areas. Barstow has a minority population rate of 45.5 percent, a public assistance rate of 15.6 percent, and a poverty rate of 14.3 percent, all of which exceed the county's rate. Conversely, the Cal/Mojave area has a low poverty, a high median income, and a relatively low minority and public assistance rate compared to Kern County and the other project areas.