

Although the proposed power plant site is located in a census tract with relatively high numbers of non-white residents and low incomes, a disproportionate environmental justice impact would not occur. This is because the region is rural and sparsely populated with scattered residences. Wikieup, the closest community to the proposed power plant site, is almost 4 miles to the northwest and the closest residence to the site is more than 0.5 mile away. Therefore, construction of the proposed plant and ancillary facilities would not affect low-income or minority populations.

TABLE 3.16-16 SUMMARY OF 1990 DEMOGRAPHIC CONDITIONS NATURAL GAS PIPELINE ROUTE			
Census Tract	Block Group	Non-White Residents	Per Capita Income
9508 (a)	1	7 %	\$13,877
9523 (a,b)	1	20 %	\$7,341
9523 (a)	2	3 %	\$5,505
Source: Bureau of the Census, 1990			
(a) Includes the location of the natural gas pipeline			
(b) Includes the location of the proposed power plant site			

TABLE 3.16-17 COMPARISON OF 1990 DEMOGRAPHIC CONDITIONS MOHAVE COUNTY AND ARIZONA		
Area	Non-White Residents	Per Capita Income
Mohave County	5 %	\$11,933
State of Arizona	19 %	\$13,461
Source: Bureau of the Census 1990		

There are no concentrations of Native American populations in the Project vicinity. A discussion of Native American traditional cultural resources is presented in Section 3.15, and Indian Trust Assets are discussed in Section 5.3.

### *Alternative R Gas Pipeline Corridor*

As with the Proposed Action, impacts were only assessed on a regional basis, and therefore socioeconomic effects for Alternative R would be the same as the Proposed Action. Although

this alternative would involve a somewhat different gas pipeline route than the Proposed Action, the same Census Bureau tracts would be crossed and disproportionate Environmental Justice impacts would not occur.

### *Alternative T Gas Pipeline Corridor and Communication Facilities*

As with the Proposed Action, impacts were only assessed on a regional basis, and therefore socioeconomic effects for Alternative T and the proposed communication facilities that would parallel this route would be the same as the Proposed Action. Although Alternative T would involve a somewhat different gas pipeline route compared to the Proposed Action, the same Census Bureau tracts would be crossed and disproportionate Environmental Justice impacts would not occur.

### *No-Action Alternative*

**Under the No-Action Alternative, no additional facilities would be constructed for the Project and there would be no socioeconomic impacts**

### 3.16.2.6 Mitigation and Residual Impacts

No significant impacts would result from the implementation of the Proposed Action with the actions incorporated to reduce or prevent impacts. As a result, no additional measures to mitigate significant impacts have been identified for socioeconomics and there would be no residual significant impacts.

## 3.17 PUBLIC SAFETY AND SERVICES

### 3.17.1 Affected Environment

#### 3.17.1.1 Region of Influence

The region of influence for assessing impacts on public safety and services is defined as Mohave County. Although the majority of information is presented for the county, the description of the affected environment and the analysis of

potential impacts emphasize conditions in the Kingman, US 93 corridor, and Wikieup areas

### 3.17.1.2 Existing Conditions

#### Traffic and Transportation

ADOT reports that average two-way daily traffic along I-40 for 1999 was 26,119 vehicles. This was measured from milepost 53 (just east of Kingman) to milepost 72 (near the intersection with US 93). Along US 93 (between I-40 and Wikieup), the average daily two-way traffic count was 5,442 vehicles. This is equivalent to an annual total of 264.52 million vehicle-miles over the 61.6-mile distance between Kingman and Wikieup (Cathpole, personal communication, 2001).

The accident rate along I-40 between Kingman and US 93 was 0.20 accident per million vehicle-miles in 2000, which was associated with 36 accidents. The statewide accident average for a four-lane divided highway is 0.7 accident per million vehicle-miles. The LOS for I-40 between Kingman and US 93 is rated by ADOT as either “B” or “C” (ADOT 1999)

In 1999, there were 5,442 two-way vehicles along US 93 between I-40 and Wikieup. From 1992 through 1997, the average accident rate between I-40 and just south of Wikieup (from milepost 91.5 to milepost 127.0) was 0.78 accident per million vehicle-miles. By comparison, the average accident rate for a typical two-lane rural highway in Arizona is 0.97 accident per million vehicle-miles. Although this accident rate is less than the statewide average, ADOT has indicated that there are 11, 1-mile sections along US 93 between I-40 and Wikieup where the accident rate is at, or substantially higher than, the state average (ADOT 2000). Areas of higher accident rates occur at mileposts 96, 98, 105, 108, 110, 112, 114, 117, 118, 120, and 124.

More recent data suggest that the accident rate along US 93 has improved since 1997. In 2000, with total vehicle traffic of 85.01 million

vehicle-miles, there were a reported 49 accidents (equal to an accident rate of 0.58 accident per million vehicle-miles). Sleepy or intoxicated drivers caused approximately 17 percent of all traffic accidents along this part of US 93. About one-third of all accidents took place after dark and ADOT determined that pavement conditions were not a factor for the reported accidents.

The current Level of Service (LOS) for this portion of US 93 is rated as “E,” which indicates that there can be substantial travel delays and difficulty in passing. As described in Section 3.16., the LOS is a qualitative measure describing traffic operational conditions in terms of speed, travel time, freedom to maneuver, safety, and other factors. A rating of “A” represents the best operating conditions and a rating of “F” indicates heavy congestion and traffic that is exceeding highway capacity.

ADOT reports that in 1997, there were 50 vehicles per day along Hackberry Road, near US 93.

Neither the state of Arizona nor Mohave County keeps traffic count records for the section of old US Route 93, which is corridor segment C2.

#### Public Services

Existing public services are described for Mohave County, Kingman and Wikieup and do not significantly vary according to individual pipeline corridor segment.

Public services are described in detail in Section 3.16, and are only summarized in this section.

The county is served by four hospitals and numerous clinics or extended health care facilities. The Kingman Regional Medical Center has 124 beds, with a staff of 51 physicians and offers a full range of facilities. The closest emergency medical care facility to Wikieup is located in Kingman.

There are 17 fire districts in the county that provide services to most urban areas. Fire protection within Kingman is provided by the Kingman Municipal Fire Department, which has 4 fire stations, 35 firefighters, and 29 volunteers (City of Kingman Community Perspectives, updated January 2000). The Pinion-Pine Fire District reports that although Wikieup is not within its fire district, the District normally responds to fires, car accidents, and other emergencies along the US 93 corridor. In an emergency, firefighters could reach Wikieup in about 45 minutes. The District also is on call to respond to wildfires throughout the state.

Law enforcement is provided throughout the county by the Mohave County Sheriff's Department and by municipal police departments. The County Sheriff's Department has 234 employees (127 located in Kingman). There are 35 Sheriff's officers assigned to the Kingman area. The main county correction facility holds 290 individuals.

Wikieup obtains drinking water from nearby wells and relies on leach fields or septic systems for wastewater disposal.

### Mohave County Emergency Plans

Mohave County has an Emergency Operations Plan that provides a framework for rapid response to peacetime disasters. This plan defines local emergencies as the existence of conditions of disaster that are likely to be "beyond the control" of the services of a political subdivision. The plan provides for a range of disaster-related efforts, including emergency health care, evacuation, damage assessments, provision of food and clothing, and other services. It also includes a Hazardous Materials Emergency Response Plan.

### Electric and Magnetic Fields

The proposed power plant would interconnect with the existing Mead-Phoenix Project 500-kV transmission line. Both current and voltage are required to transmit electrical energy over a

transmission line. The voltage is expressed in volts and is the source of an electric field. The current, a flow of electrical charge measured in amperes (amps), is the source of a magnetic field. The electric and magnetic field effects of the Mead-Phoenix Project were addressed in the *Environmental Analysis of the Changes to the Proposed Mead-Phoenix Transmission Project*, issued by Western in September 1989 (Appendix G). The calculated electric field for the Mead-Phoenix Project 500-kV transmission line is 8.2 kilovolts/meter (KV/m) at the centerline of the right-of-way and 1.7 KV/m at the edge of the right-of-way. A 60-hertz magnetic field is created in the space around the transmission line conductors by the electric current flowing in the conductors. The magnetic field is expressed in units of gauss or milligauss (mG), where 1 milligauss is 1/1,000 of a gauss. The maximum magnetic field calculated for the Mead-Phoenix Project 500-kV transmission line when it is carrying 1,000 amps is 168 mG at the center of the right-of-way. At the edge of the right-of-way, the magnetic field was calculated to be 36 mG.

## 3.17.2 Environmental Consequences

### 3.17.2.1 Identification of Issues

Public safety and service issues related to this Project include the following:

- potential for increased electromagnetic radiation
- potential impacts on traffic flow and safety from transportation of plant components, equipment, and construction materials to the site
- potential hazard if ADOT bridge construction coincides with transportation of heavy equipment
- worker and public health and safety, including construction and operation practices

- transportation, storage, and handling of potentially hazardous materials
- effect of increased traffic created by the commuting workforce
- gas pipeline operational safety (including low probability/severe consequence catastrophic accidents)
- increased demand for police and fire protection, and emergency medical services.

### 3.17.2.2 Significance Criteria

Impacts on public safety and services would be considered significant if any of the following were to occur:

- traffic associated with the Project substantially degrades the LOS on US 93 or traffic safety substantially deteriorates
- substantial adverse effects occur to public or worker health and safety
- substantial deterioration of public services occurs
- substantial increases in electric and magnetic fields occur

### 3.17.2.3 Impact Assessment Methods

Impact assessment methods are directly tied to applicable regulations or standards and vary according to the individual issue. For electric and magnetic fields, impacts were assessed by comparison to the original analysis conducted for the Mead-Phoenix Project. Impacts related to increased construction traffic (both for equipment deliveries and commuting workers) were assessed by determining if the Arizona Department of Transportation (ADOT) has safety concerns or if ADOT expects that the LOS on nearby highways may be “downgraded” to reflect increased congestion. The same standard was used to determine if commuting

operating workers would increase traffic along I-40 or US 93 to unsafe levels.

For the handling and storage of hazardous materials or other waste, potential impacts were estimated by identifying if (during construction and operation) site contractors would comply with Federal, state, and local regulations. Potential impacts of gas pipeline construction and operation are directly related to strict compliance with applicable US Department of Transportation regulations. Impact assessment methods also showed if facility construction and operation would place demands on local or regional public services, such as police or fire protection.

### 3.17.2.4 Actions Incorporated into the Proposed Action to Reduce or Prevent Impacts

The Proposed Action includes the following measures to reduce or prevent potential adverse environmental impacts to public safety and services:

- proper design of plant facilities
- onsite fire protection
- onsite security
- preparation of Health and Safety Plan and Procedures including the following:
  - safety responsibilities of the site manager
  - responsibilities of the Public Health and Safety Officer
  - use of safety equipment for workers
  - worker training
- proper hazardous materials and waste handling and disposal
- SPCC/HMSPC Plans

- Emergency Plans
- coordination with ADOT and provision of turnouts on routes traveled by heavy loads.
- pipeline testing and inspection

### 3.17.2.5 Impact Assessment

#### *Proposed Action*

#### Electric and Magnetic Fields

The interconnection and wheeling of power on the Mead-Phoenix Project 500-kV transmission line from the proposed power plant would not increase the maximum current that the transmission line is capable of carrying because the Mead-Phoenix Project 500-kV transmission line would still operate within its maximum working range. The interconnection and wheeling of power on the Mead-Phoenix Project 500-kV transmission line would not change the voltage and, therefore, the electric fields would not change.

However, the proposed interconnection, substation, and power plant would each create electric and magnetic fields (EMF) within areas currently not subjected to fields. These areas include the new tap line connecting the Mead-Phoenix Project 500-kV transmission line with the proposed power plant and substation. The proposed new tap lines, each shorter than 500 feet, would generate EMF at the same strengths of the Mead-Phoenix Project 500-kV transmission line.

Western addressed electric and magnetic fields and effects for a 500-kV transmission in the EIS for the Navajo Transmission Project (NTP) (DOE/EIS-0231, Draft issued September 1996, Final issued August 1997). Information on EMF from the NTP EIS is incorporated by reference and included in Appendix G. The electrical effects of the proposed transmission line interconnection would be the same as the effects addressed for NTP. These effects include corona effects and field effects. Corona is the electrical

breakdown of air into charged particles; it is caused by the electric field at the surface of the conductors. Effects of corona are audible noise, radio and television interference, visible light, and photochemical oxidants. Field effects are induced currents and voltages, as well as related effects that might occur as a result of EMF at ground level. The corona and field effects for the proposed Big Sandy transmission line additions would be similar to those predicted for NTP. The level of noise at the edge of the right-of-way of the new interconnecting lines and the fence line for the proposed substation would be less than the noise generated by the proposed power plant, and thus would not be detectable.

Since the issuance of the NTP EIS, more research has been conducted examining long-term health effects. There is considerable uncertainty about the EMF/health effects issue. The following have been established from the available information by Western:

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

No Federal regulations have been established specifying environmental limits on the strengths of fields from power lines. However, the Federal government continues to conduct and encourage research necessary for an appropriate policy on the EMF issue.

In the face of the present uncertainty, several states have opted for design-driven regulations ensuring that fields from new lines are generally similar to those from existing lines. Some states (Florida, Minnesota, New Jersey, New York,

and Montana) have set specific environmental limits on one or both fields in this regard. These limits are, however, not based on any specific health effects. Most regulatory agencies believe that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines. No regulations have been established in Arizona.

Before the present health-based concern developed, measures to reduce field effects from power line operations were mostly aimed at the electric field component, whose effects can manifest as radio noise, audible noise, and nuisance shocks. The present focus is on the magnetic field because only this type of field can penetrate building materials to potentially produce the types of health impacts that are of concern. It is important to note when considering the effects of magnetic fields from power lines that an individual in a home could be exposed for short periods to much stronger fields while using some common household appliances (National Institutes of Environmental Health Sciences [NIEHS] and DOE 1995). Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. High-level magnetic field exposures regularly occur in areas other than the power line environment.

Western and the EPRI, formerly Electric Power Research Institute, continue to review the results of EMF and health-related research. The results of recent research and reviews follow.

In June, 1999 the NIEHS released its report *Health Effects From Exposure to Power-line Frequency Electric and Magnetic Fields* (NIEHS 1999). The report's Executive Summary concludes that

“extremely-low-frequency electric and magnetic field (ELF-EMF) exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. In our opinion [NIEHS], this finding is in sufficient to

warrant aggressive regulatory concern. However, because virtually everyone in the United States uses electricity and therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. The NIEHS does not believe that other cancers or non-cancer health outcomes provide sufficient evidence of a risk to currently warrant concern.”

Nevertheless, the report goes on to recommend some actions:

“In summary, the NIEHS believes that there is weak evidence for possible health effects from ELF-EMF exposures, and until stronger evidence changes this opinion, inexpensive and safe reductions in exposure should be encouraged.”

The NIEHS report, submitted to Congress, is the culmination of a long-term commitment of the NIEHS under the Research and Public Information Dissemination (RAPID) Project which began with the Energy Policy Act of 1992. RAPID's objective was to accelerate applied EMF research with a focused program supported by matching funds from the Federal government and the private sector. The electric utility industry provided most of the private sector funds.

The most significant source for the NIEHS report was the NIEHS Working Group Report, which resulted from a nine-day meeting in June 1998. The Working Group considered all literature relevant to the potential effects of power-frequency EMF on health, including cancers of several types, adverse pregnancy outcomes, chronic illnesses (e.g., Alzheimer's disease and amyotrophic lateral sclerosis), and neurobehavioral changes (e.g., depression, learning, and performance). The Working Group found limited support for a causal relationship between childhood leukemia and residential exposure to EMF, and between adult chronic

lymphocytic leukemia and employment in jobs with potentially high magnetic field exposure. Based on this assessment and charged with ranking EMF according to International Agency for Research on Cancer criteria, the Working Group assigned EMF a 2B ranking, which translates to “possible human carcinogen.” For all other health outcomes, the Working Group concluded that the evidence was inadequate.

Although regulatory actions are not in the purview of the NIEHS, they suggest that

“the power industry continue its current practice of siting power lines to reduce exposures and continue to explore ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards. We [NIEHS] also encourage technologies that lower exposures from neighborhood distribution lines provided that they do not increase other risks, such as those from accidental electrocution or fire.”

Proposed use of the existing Mead-Phoenix Project transmission line would not lead to increased exposures because the line is in an area that is generally inaccessible to the general population.

#### Safety Issues Related to Increased Traffic

Construction of the proposed power plant would create short-term effects associated with delivery of steam turbines, combustion turbines, generators, transformers, and other equipment. It also would create short-term effects from the commuting workers. The heavy equipment would be delivered by ship to the Port of Houston, Texas, and then loaded on dedicated rail cars for shipment to Kingman. From Kingman, the equipment shipments would be moved along I-40 east to US 93, then south to the site access road located about 2 miles south of Wikieup. The total distance to be traveled on roadways would be approximately 60 miles.

Shipment of heavy equipment would require an oversize load permit issued by ADOT.

Application for this permit would be made directly by the haul contractor and the permit would be in compliance with ADOT General Order No. R17-4 through R17-208 (Rules and Regulations for Over-dimensional and Over-weight Vehicles).

The oversize load application requires submittal of detailed drawing of all overpasses, overhead utility lines, bridges, intersecting roads, and other features that could pose safety problems. ADOT normally requires a “pilot” car with flashing lights that precedes the load, a highway patrol officer, additional supports for bridges, and restrictions on the time of day delivery is made. At an average speed of about 7 miles per hour, each heavy equipment trip would take about 8 hours.

Approximately 45 deliveries of heavy equipment are estimated to be necessary and this would affect traffic along both I-40 and US 93. The heat recovery steam generators likely would be delivered during months 6 through 9, the combustion turbine in construction months 7 through 9. The steam turbines would be delivered in months 8 to 10. Added to this traffic load would be numerous smaller truck deliveries (excluding heavy equipment).

The delivery of oversize loads may require temporary closure of I-40 or US 93. This possibility cannot be assessed by ADOT until formal application is made for an oversize load permit. Caithness has proposed to use special temporary passing lanes or “turn-outs” every mile or so along US 93 that would allow motorists to pass the oversize load with limited delays.

It is estimated that in construction month 7, there would be about 20 heavy equipment deliveries and about 500 additional deliveries of mechanical equipment, electrical equipment, piping, concrete, rebar, and other supplies. The total deliveries for month 7 therefore would be approximately 500 delivery trips. Also during

this month, it is estimated for Phase 1 that there would be approximately 300 construction workers commuting to the site each day. It was assumed that there would be about 1.5 workers per vehicle, so the total number of two-way worker vehicles would be 200 vehicles. The total traffic increase for month 7 would therefore be approximately 700 vehicles.

This increased traffic would represent about 12 percent on US 93 compared to current 24-hour average daily levels. The temporary traffic increase along I-40 would be only about 4 percent. Because of the short-term nature of this traffic increase, ADOT would not expect to downgrade the LOS for either I-40 or US 93. Phase 2 would require additional equipment deliveries and commuting construction workers. However, those levels would be less than estimated for Phase 1.

Strict compliance with all provisions and mitigation imposed by the oversize load permit would ensure that significant traffic impacts do not occur.

The vehicle traffic associated with power plant operations (delivery of supplies and the commuting workforce) would have only a minor effect on traffic. Total daily vehicle deliveries and commuting operators probably would not exceed an average of 30 or 35 vehicles per day.

Construction of the natural gas pipeline through Wikieup would temporarily disrupt local traffic and may increase safety concerns for motorists and pedestrians. In this respect, the Proposed Action would be similar to Alternative R (which would also pass through the town) and less favorable than Alternative T, which would use corridor segment T5.

#### Potential Hazard if ADOT Bridge Construction Coincides with Project Construction

ADOT would not expect any substantial traffic or safety issues if construction of the new US 93 bridge and the proposed Project were to coincide (Elters 2000). The Proposed Action includes

close coordination with ADOT to ensure that bridge construction does not take place when heavy equipment is delivered. Therefore, no significant impacts would occur.

#### Worker and Public Health and Safety, Including Construction and Operation Practices

Implementation of the specific programs and measures to ensure public health and safety as well as worker safety included in the Proposed Action would minimize adverse effects to public services or worker health and safety to below the level of significance.

#### Effect of Increased Traffic Created by the Commuting Workforce

The effect of the commuting workforce on traffic is described above. During peak construction of Phase 1, there would be a commuting workforce of about 650 individuals and essentially all of the workers would come from Kingman. With an assumed level of car pooling (1.5 workers per vehicle), this means that the daily two-way peak would be about 430 vehicles. This short-term increase would represent an increase of about 7 percent compared to current traffic along US 93. This effect would be noticeable by area residents but would not be significant. It would not likely cause ADOT to downgrade the LOS for either I-40 or US 93. Phase 2 would require additional commuting construction workers; however, these levels would be less than Phase 1.

Construction workers would not likely use corridor segment R1 (Hackberry Road) because it is unimproved and would be much slower compared to US 93.

#### Gas Pipeline Operational Safety

After installation, the pipeline would be hydrostatically tested to verify the integrity of the completed steel pipeline system. In accordance with 49 CFR 192 regulations, the hydrostatic test pressure would range from 1.1 to 1.5 times the pipeline's maximum operating

pressure. To accomplish this integrity testing, the pipeline would be hydrostatically tested in sections, at locations to be determined based upon elevation change, and water transferred across sections after testing. The pipeline owner and operator would conduct maintenance of the pipeline. Routine activities primarily would involve inspection for leaks. Inspection of the line would be accomplished in accordance with U. S. Department of Transportation regulations, Part 192.105, 106, and 107.

The pipeline would be patrolled by air every six months. Routine inspection also would be conducted annually using a two-track vehicle or by foot. If leaks were encountered, they would be isolated, exposed, and repaired in accordance with industry practices. Because the potential for a catastrophic event is low, the operation of the pipeline would not result in substantial effects to public or worker safety and therefore there would be no significant impact.

Should a catastrophic event such as a gas pipeline explosion occur, the site construction or site operations manager would immediately contact appropriate staff with Mohave County (Emergency Operations Plan), Arizona (Emergency Response and Recovery Plan), and the US Department of Transportation. Onsite staff would assist these and other agencies with such essential functions as communications, fire fighting, emergency medical assistance, law enforcement, assistance, evacuation, and search and rescue.

#### Increased Demand for Police and Fire Protection, and Emergency Medical Services

The Proposed Action includes all necessary utilities at the plant site, including security, fire suppression, water supply, wastewater disposal, and emergency medical care. Individuals trained in cardio pulmonary resuscitation (CPR) and emergency medical procedures will be on site. Hazardous waste material would be removed by a licensed contractor and properly disposed in an approved landfill. Therefore, construction and operation of the power plant and ancillary

facilities (including the pipeline) would not place significant additional demands on or deteriorate county public services.

#### *Alternative R Gas Pipeline Corridor*

The effects of this alternative would be the same as for the Proposed Action except for safety issues related to traffic. Construction would take place generally along US 93 that would also be used for equipment deliveries and by commuting construction workers. These effects would not rise to the level of significance.

#### *Alternative T Gas Pipeline Corridor*

The effects of this alternative would be the same as for the Proposed Action except construction of the gas pipeline along the Alternative T gas pipeline corridor would have less of an effect on traffic than the Proposed Action or Alternative R. These effects would be less than significant.

#### *Corridor Segment C2*

Use of corridor segment C2 for any pipeline route would not result in any adverse impacts that would differ substantially from the Proposed Action, nor would construction in this corridor segment cause any significant effects.

#### *Communication Facilities*

The installation of the OPGW and microwave towers would have little or no effect on public safety and services.

#### *No-Action Alternative*

No adverse effects on public safety and services would occur if the No-Action Alternative were adopted.

#### **3.17.2.6 Mitigation and Residual Impacts**

No significant impacts would result from the implementation of the Proposed Action with the actions incorporated to reduce or prevent impacts. As a result, no additional measures to

mitigate significant impacts have been identified for public safety and services and there would be no residual significant impacts.

### 3.18 NOISE

This section describes the existing noise environment at and in the vicinity of the proposed power plant site, and assesses potential noise impacts associated with the Proposed Action and alternatives. Noise-sensitive receptors that may be affected by noise are identified, as well as the laws, ordinances, regulations, and standards that regulate noise levels at those receptors. The following discussion describes the results of sound level measurements, acoustical calculations, and assessment of potential noise impacts. Where appropriate, mitigation measures are proposed to reduce potential Project-related noise impacts to acceptable levels.

#### 3.18.1 Affected Environment

Noise-sensitive receptors are land uses associated with indoor and outdoor activities that may be subject to stress or significant interference from noise. They often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. Industrial, commercial, and agricultural and undeveloped land uses generally are not considered sensitive to ambient noise. A land use map (Figure 3.7-1) that identifies residences and other land uses where quiet is an important attribute of the environment within the region of influence is located in Section 3.7.

The general area surrounding the proposed power plant site, pipelines, and associated facilities varies from flat areas, to rolling hills, to fairly mountainous and rocky terrain east of the proposed power plant site. The area is primarily open rangeland that is undeveloped or grazed by livestock and/or wild burros. The general area shows evidence of some vehicle traffic; however, the disturbance appears predominantly limited to small areas (e.g., near well sites). The

developed uses in the vicinity are limited to the Mead-Phoenix Project 500-kV transmission line, the Phelps Dodge water pipeline, scattered water wells, a clay mining operation, and one residence. The residence is located approximately 1 mile southwest of the proposed power plant site (and directly east of the proposed wells and agricultural use).

Land uses along the proposed pipeline corridor are primarily open space. There are four residences within corridor segment T5 just east of the Big Sandy River crossing. West of the Big Sandy River, there are six residences located within corridor segment T4. Five additional residences are located just outside the corridor, generally located along the highway. There is only one residence located in corridor segment T3. There is one residence along Hackberry Road, but it is outside the corridor.

There are approximately 41 residences dispersed along US 93 (R3, R4, and R5). There is also a small subdivision, Sierra Vista Estates, south of I-40 in T20N, R14W, Sections 12 and 13, which is approximately 0.75 miles west of the Mead-Liberty 345-kV transmission line and one residence just east of corridor segment T2.

##### 3.18.1.1 Fundamentals of Acoustics

Noise generally is defined as loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day and the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound generally is characterized by a number of