DOE/EIS-0297

Griffith Energy Project

Final Environmental Impact Statement

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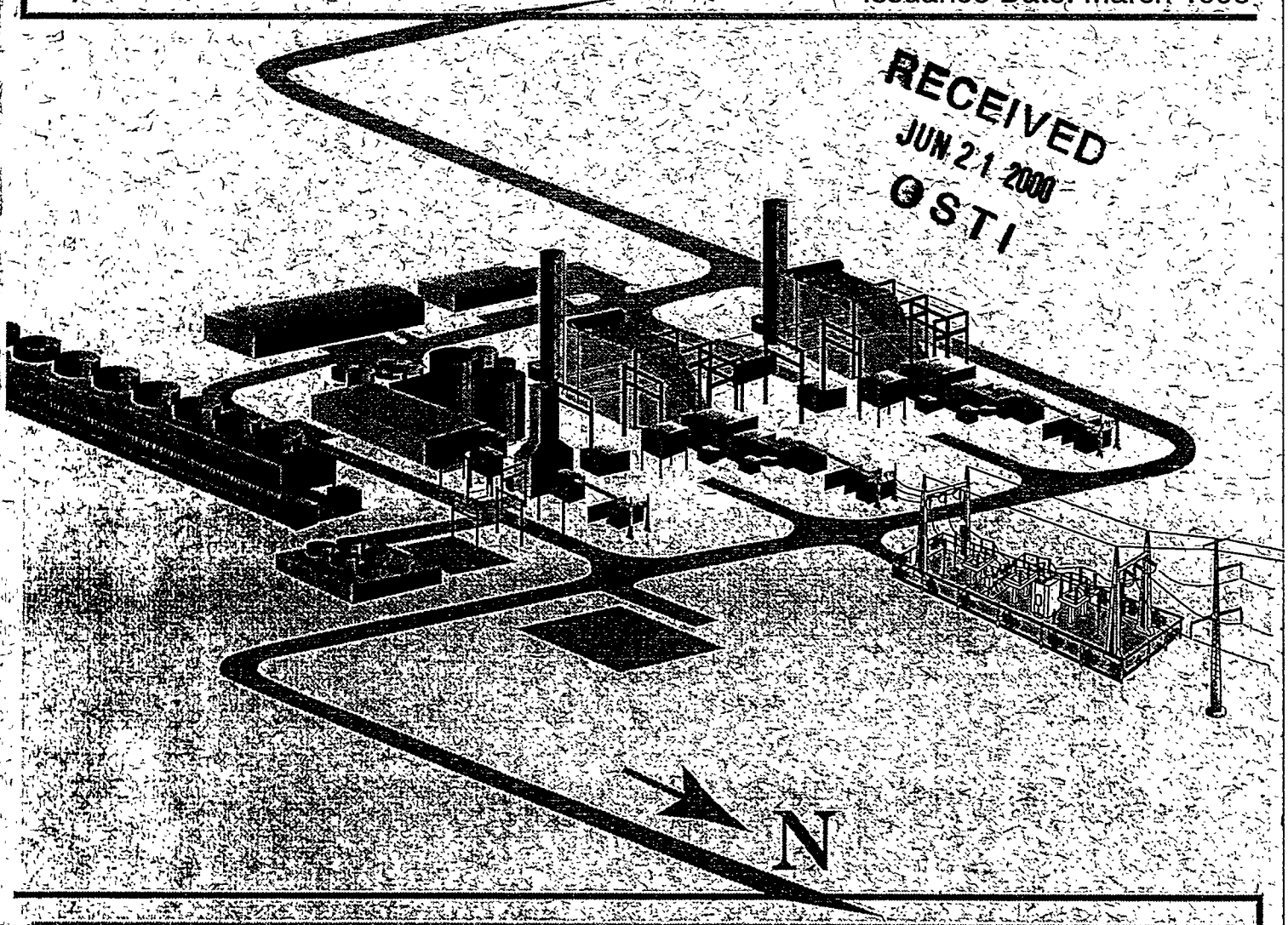

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Bureau of Land Mangement
Kingman Field Office
Cooperating Agency

WESTERN
AREA POWER
ADMINISTRATION
Lead Agency

March 1999

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COVER SHEET

Title: Griffith Energy Project Final Environmental Impact Statement

Lead Agency: U.S. Department of Energy, Western Area Power Administration

Cooperating Agency: U.S. Department of the Interior, Bureau of Land Management, Kingman Field Office

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ABSTRACT

Griffith Energy Limited Liability Corporation (Griffith) proposes to construct and operate the Griffith Energy Project (Project), a natural gas-fired, combined cycle power plant, on private lands south of Kingman, Ariz. The Project would be a "merchant plant" which means that it is not owned by a utility and there is currently no long-term commitment or obligation by any utility to purchase the capacity and energy generated by the power plant. Griffith applied to interconnect its proposed power plant with the Western Area Power Administration's (Western) Pacific Northwest-Pacific Southwest Intertie and Parker-Davis transmission systems. Western, as a major transmission system owner, needs to provide access to its transmission system when it is requested by an eligible organization per existing policies, regulations and laws. The proposed interconnection would integrate the power generated by the Project into the regional transmission grid and would allow Griffith to supply its power to the competitive electric wholesale market. Based on the application, Western's proposed action is to enter into an interconnection and construction agreement with Griffith for the requested interconnections. The proposed action includes the power plant, water wells and transmission line, natural gas pipelines, new electrical transmission lines and a substation, upgrade of an existing transmission line, and access road to the power plant. Construction of segments of the transmission lines and a proposed natural gas pipeline also require a grant of right-of-way across Federal lands administered by the Bureau of Land Management. Public comments on the Draft EIS are addressed in the Final EIS, including addenda and modifications made as a result of the comments and\or new information.

DISCLAIMER

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SUMMARY

Griffith Energy Limited Liability Corporation (Griffith) proposes to construct and operate the Griffith Energy Project (Project), a natural gas-fired, combined cycle power plant, on private lands south of Kingman, Ariz. The Project consists of a baseload 520-megawatt (MW) with peak firing capacity of 650 MW, natural gas-fired, combined cycle generating facility and on-site supporting infrastructure including an administration building, warehouse storage, auxiliary boiler, water treatment and storage facilities, cooling towers and gas conditioning equipment (collectively, the Plant). The Project includes proposed natural gas pipelines, a water supply well field and transmission pipeline and new access roads (see **Figure 1.1-1**).

Griffith applied to Western Area Power Administration (Western) to interconnect its proposed Plant with Western's Pacific Northwest-Pacific Southwest Intertie and Parker-Davis transmission systems. Western's proposed action is to provide transmission service and to integrate the power generated by the Project into the regional transmission grid. The interconnection would provide Griffith a path to the competitive electric wholesale market.

This EIS was prepared in accordance with Section 102(2) of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4332, Council of Environmental Quality regulations, and U.S. Department of Energy's (DOE) NEPA Implementing Procedures (10 CFR 1021). Western is the lead Federal Agency, as defined by 40 CFR 1501.5, and the Bureau of Land Management (BLM), Kingman Field Office, is a cooperating agency.

Both Western and the BLM will use the information in this EIS to support Federal decisions for this Project. Western will decide whether to enter into interconnection and construction agreements with Griffith, and the best way to interconnect the Project into the Western transmission system to provide the transmission service needed. BLM will decide whether or not to issue Right-of-Way Grants for the transmission lines and natural gas pipeline that would cross public lands administered by the agency.

PURPOSE AND NEED

Western must respond to Griffith's request for interconnections under rules requiring non-discriminatory access to eligible organizations planning to compete in the deregulated utility industry and Western's open transmission line tariff. BLM needs to respond to Griffith's and Western's requests for rights-of-way for new transmission lines and a pipeline to cross Federal lands managed by the BLM.

The purposes of this proposed action include:

- To provide sufficient transmission service and transmission capacity for the Griffith Energy Project without degrading service to existing customers.

- To meet the intent of the requirements of Federal Energy Regulatory Commission (FERC) Order No. 888 in providing transmission access to Griffith consistent with statutory objectives.

- To ensure area transmission reliability and voltage support criteria are maintained or improved.

- To cause the minimum adverse environmental effects, consistent with Federal land management policies.

- To ensure Western has sufficient transmission capacity to meet its contractual obligations.

PROPOSED ACTION AND ALTERNATIVES

The Plant and infrastructure would occupy less than 65 acres of a 160-acre site in the Mohave County Interstate 40 (I-40) Industrial Corridor south of Kingman. Griffith proposes to use an infrastructure system being developed for the I-40 Industrial Corridor, which includes water pipelines that would bring water from a well field, provided by Golden Valley County Improvement District #2 (GVID2) within three miles west of the Plant site. Water demand for the Project is projected at 3,300 gallons per minute based on an average annual flow rate. Also, underground gas pipelines would bring high-pressure gas to the generating facility from two natural gas transmission pipelines. Road development planned for the Industrial Corridor would also provide access to the Plant.

Other required facilities would include: 1) two natural gas supply lines; 2) two new 230-kilovolt (kV) electrical transmission lines; 3) a new 230/345-kV substation and associated access road; and 4) an upgrade of an existing 230-kV transmission line.

The proposed Plant, well field, water pipeline, and one gas pipeline would be located on private lands. The other components of the Project are located on private, state, and Federal lands managed by the BLM. The Plant site and associated facilities have been approved by the Arizona Corporation Commission's Power Plant and Transmission Line Siting Committee through a formal application approval process. The proposed Griffith Plant would burn only natural gas, consuming an estimated 110 million cubic feet per day. The Project would develop interconnections with two potential gas suppliers: El Paso Natural Gas Company (EPNGC) and Transwestern Pipeline Company (TPC). EPNGC's pipeline is located approximately 4.5 miles east of the proposed Plant and TPC's line is approximately 2.5 miles north. These gas pipeline facilities would consist of a tap, meter station, flow control valve and a lateral pipeline to the Plant. Construction and operation of the pipeline across BLM lands would require a right-of-way on Federal lands.

The generator of each gas turbine set would be connected to the high-voltage switchyard via generator leads and a generator step-up transformer. A unit breaker would be provided in the switchyard to connect the unit to the grid.

PLANT SITE

While the power plant could be located anywhere in the region, Griffith Energy evaluated several sites and determined that siting the Project near Kingman and building the necessary transmission interconnections to export the generated power would provide a secondary benefit of increasing the reliability of the local electrical system. Also, using water from the Colorado River for the Griffith Energy Project at its current site was not considered viable. Sites closer to the Colorado River specifically would be closer to either the Grand Canyon or Lake Mead National Recreation Area. Therefore, no sites outside the vicinity of Kingman were considered.

Griffith Energy then looked for a site that met three primary criteria: 1) compatible zoning and nearby land uses, 2) sufficient distance from the Grand Canyon to minimize any potential haze impacts, and 3) proximity to gas, transmission, highway, rail, and water. The industrial areas in the vicinity of Kingman were evaluated, and the I-40 Industrial Corridor was proposed because it was the farthest from the Grand Canyon. The final site was proposed within this area.

NATURAL GAS LINES

An alternative route for the proposed natural gas supply pipeline between the Project site and the EPNGC transmission line has been proposed by the BLM. The proposed alternative route would traverse northeasterly across private and BLM lands until it intercepted an existing BLM road that it would follow to the interconnection with the EPNGC line. Most of the right-of-way would be returned to use as an improved road. Portions of the construction right-of-way not needed for the road would be reclaimed as specified by BLM.

An alternative route for the gas line to the TPC transmission line would travel due north from the Plant site either in the County Road ROW 1/2 mile east of the western boundaries of Section 6, 31, 30, and 19, T20N, R17W, or near this ROW in a separate easement.

WATER SUPPLY

Groundwater from the Sacramento Valley Aquifer is the planned source of water for the Plant. The only other significant source of water in Mohave County with the capacity to supply the project requirements is the Colorado River, which is located some 30 miles to the west and 2,000 feet lower in elevation. At that distance and elevation, it is neither feasible nor economical to consider using water from the river.

The following table shows the amount of water used by various components of the plant.

Breakdown of Water Consumption by the Griffith Power Plant

	GPM	PERCENT
Steam Turbine Cooling	3,173	96.44
Cooling Tower Blowdown	38	1.16
Nonrecoverable losses	25	0.76

Demineralized water of the quality required by the plant would be generated from raw water using a reverse-osmosis system followed by a demineralizer unit. In addition to raw water, recycled water would also go through this system. The current plan is to recycle the water up to 12 times. Maximizing the number of times the water is recycled through the plant will minimize total water consumption. In addition to the proposed this proposed system, other alternatives for reducing water consumption were considered except open cycle cooling because the Plant is not located near a body of water. Closed cycle dry cooling was considered, but was dismissed because the need for added equipment would increase the total capital cost of the project.

A 25-acre, 10-foot-deep Brine Disposal Pond designed as a zero-discharge facility would handle discharge from the plant, along with storm water runoff from the Plant site. An Aquifer Protection Permit application submitted to ADEQ contained commitments to verify the integrity of the pond's liner both before operations and one year after operations begin. Routine groundwater monitoring is not proposed but would be conducted if a leak were detected. The brine pond, and the entire plant site, would be fenced off to control both human and wildlife surface access. The pond would be monitored for waterfowl use, and if problems are encountered, Griffith would develop mitigation in consultation with the Arizona Department of Fish and Game.

TRANSMISSION LINES

To interconnect the Plant with the regional electric transmission grid, Western would construct and operate two new 230-kV transmission lines between the Plant and two existing transmission lines, upgrade an existing Western 230-kV line, build a new substation and make modifications at the existing McConnico and Mead substations. The new lines would interconnect the Plant with Western's existing Davis-Prescott 230-kV line at the existing McConnico Substation (Segments A and D in **Figure 1.1-1**) and its existing Mead-Liberty 345-kV line at a new Peacock Substation (Segments A, B and C in **Figure 1.1-1**). The existing Davis-Prescott 230-kV line between Davis and the new substation would be upgraded (Segment Z in **Figure 1.1-1**) with new conductor and structures within some longer spans to provide additional conductor clearance. The transmission additions and upgrade would be funded by Griffith and owned and operated by Western.

Western is considering three alternate structures for the proposed new transmission lines. These are single-pole, self-supporting steel lattice and H-frame steel.

A temporary wooden pole, overhead 12.8-kV power line would be built to provide power for construction by connecting the Plant with an existing 69-kV power line located to the west. During operation, backup power for the Plant would be provided by the auxiliary transformers which would step down voltage from 230-kV to 5-kV for use within the Plant.

Because nearly all the proposed transmission interconnections involve the use of approved routes or parallel existing routes, alternatives more viable than those proposed are limited. Alternatives are:

- Two 230-kV lines north from the Griffith Plant to provide a loop to the Plant from the existing Davis-Prescott 230-kV line as an alternative to the proposed Griffith-McConnico 230-kV line. The two parallel lines would proceed due north for about six miles along the section line immediately west of the Project site (part of Segments A and E in **Figure 1.1-1**).

- Use of single shaft pole structures for the Griffith-Peacock 230-kV transmission line where it parallels the existing Davis-Prescott transmission line (Segment B and C, **Figure 1.1-1**).

Several transmission system alternatives were studied in addition to the proposed interconnection of the Mead-Liberty line to provide a path to a marketing hub. Due to high costs these alternatives are not viable for Griffith.

The alternative of building underground lines was also considered and rejected. A DOE publication reports that the cost of undergrounding a 230-kV transmission line would be roughly eight to 10 times the cost of constructing an overhead system of comparable capacity (DOE, 1982). Underground construction is generally used only at lower voltages, where the problems of heat dissipation are far less severe, or for distances of not more than a few miles in very intensively developed urban areas, extremely critical scenic areas, or areas where overhead lines would result in collisions that severely impact waterfowl.

Western's preferred alternative is the proposed transmission additions (two new transmission lines along Segments A and D, and A, B and C, respectively; the new Peacock Substation and the Davis-Prescott upgrade along Segment Z).

NO ACTION ALTERNATIVE

Three different scenarios were evaluated under the No Action Alternative:

- Scenario 1: Griffith Energy would build the same transmission lines and interconnections instead of Western.

- Scenario 2: Griffith would build the Plant and similar or slightly different transmission lines and interconnections, possibly in concert with another utility or government parties.

- Scenario 3: The Plant would not be built

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The Project area is located within the Basin and Range physiographic province which is characterized by north-south mountain ranges separated by desert plains (Thornbury, 1965). It includes private land, state lands and Federal lands administered by BLM, the Bureau of Reclamation, and the National Park Service. The following table summarizes environmental consequences of the proposed action and alternatives.

Environmental Consequences

Affected Environment	Proposed Action	No Action	Alternatives
GEOLOGY/ MINERALS/ GEOLOGIC HAZARDS	**All Elements** Seismic risk is moderate; stable alluvial deposits. Minimal loss of sand/gravel resources. No active faults.	**Scenario 1** Similar impact to proposed action.	**Alternate Transmission Line** The same as those for Griffith-McConnico Line.
	Transmission Lines Minimal risk of rockfall and slope failure except for Black and Peacock Mountains, where potential is moderate.	**Scenario 2** Similar impact to proposed action.	**Alternate Gas Pipelines** Similar to the proposed action.
	Power Plant and Associated Facilities Little impact on topography. Loss of 160 acres of sand and gravel resources. Natural gas consumption of 22 to 41 billion cubic feet per year. Low impact from mass wasting. Large earthquake could rupture brine disposal pond.	**Scenario 3** No impact.	
WATER RESOURCES	**Transmission Lines** *Surface Water Quantity* Increased runoff possible in disturbed areas, resulting in gullying. Minimal disturbance to floodplains.	**Scenario 1** Similar impact to proposed action.	**Alternative Transmission Line** Similar to those for the proposed action.
	Water Quality Potential for increased sediment migration from auxiliary facilities associated with building or upgrading transmission lines lines.	**Scenario 2** Similar impact to proposed action.	**Alternative Gas Pipelines** Similar to those for proposed pipeline route.
	Potential contamination hazard caused by use of fuels, lubricants and other hazardous fluids.	**Scenario 3** No impact. Other demands on the aquifer would still occur.	

Affected Environment	Proposed Action	No Action	Alternatives
WATER RESOURCES (Continued)	**Power Plant and Associated Facilities** *Groundwater Quantity* Annual withdrawal of 3,064 to 5,323 acre feet of water from the Sacramento Valley Aquifer, lowering the water table at the wells by 109.5 feet over 40 years. Projected total withdrawal for 40 years is 78.736 acre-feet from Golden Valley plus 212,920 acre feet for Griffith, leaving 2,008,704 acre feet available. Adverse impact on total volume of water in the aquifer. *Groundwater Quality* No impact expected due to construction or operation. Potential contamination hazard from use and storage of fuel, lubricants and other fluids during construction and operation. *Surface Water Quantity* Plant designed as a zero-discharge facility. Minimal impact to drainage patterns. *Surface Water Quality* No significant impacts from construction or operation. Negligible sedimentation. Potential for soil erosion during clearing and grading for the gas and water pipeline. Brine disposal pond would exceed wildlife effluent dependent surface water standards for chronic and acute exposure to arsenic, barium, cadmium, chromium, copper, mercury, selenium, silver and zinc.		

Affected Environment	Proposed Action	No Action	Alternatives
WATER RESOURCES (Continued)	Potential contamination hazard from storage and use of fuels, lubricants and other fluids during construction and operation.		
AIR QUALITY	**Transmission Lines** Temporary and vehicle emissions from construction activities. **Power Plant and Associated Facilities** Best available technology would reduce NO_2 and CO to 4.5 and 17 parts per million, respectively. Effect on Grand Canyon regional haze: Visible range may be decreased by 4.7 percent 2.7 percent of the time based on worst-case scenario. Current modeling results show that the Griffith Project would not have significant effects on visibility at the Grand Canyon	**Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action. **Scenario 3** No impact.	**Alternative Transmission Line** Slightly higher construction-related dust and vehicle emissions than the proposed action due to more transmission towers. **Alternate Gas Pipelines** Same as proposed action.
SOILS	**Griffith-Peacock 230-kV Line** Increased potential for water erosion during construction but would be minimized by standard mitigation. **Griffith-McConnico 230-kV Line** Minimal risk of accelerated soil erosion.	**All Elements Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action.	**Alternative Transmission Line** Slightly more impact than the Proposed Action. **Alternate Gas Pipelines** Longer routes would cause greater soil disturbance in the short term. Northern pipeline alternative would cause more new ground disturbance. Long-term disturbance similar to proposed action.

Affected Environment	Proposed Action	No Action	Alternatives
SOILS (Continued)	**Peacock-Davis 230-kV Upgrade** Increased short-term potential for accelerated water erosion of soil. Use of existing access would minimize impacts. **Power Plant and Associated Facilities** Increase in water and wind soil erosion possible. Removal of protective vegetation on gas and water pipeline rights-of-way could increase the possibility of erosion. Ground cover would take years to reestablish.	**Scenario 3** No impact.	
VEGETATION	**Griffith-Peacock 230-kV Line** Temporary loss of vegetation due to trampling and soil compaction. **Peacock Substation** Temporary loss of vegetation due to trampling and soil compaction during construction. Permanent loss of 10 acres of semidesert mixed grass-mixed scrub series vegetation due to placement of new access roads and substation equipment. **Griffith-McConnico 230-kV Line** Temporary loss of vegetation due to trampling and compaction. Minimal permanent loss of vegetation due to placement of new access roads, interconnects and conductor pulling sites. **Power Plant and Associated Facilities** Minimal loss of habitat compared to abundance of habitat in the area.	**All Elements Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action, but in a different location. **Scenario 3** No impact.	**Alternative Transmission Lines** Slightly more impact than the proposed action due to construction of additional towers. **Alternate Gas Pipelines** Temporary loss of desert scrub habitat. Northern pipeline alternative would disturb about 7 more acres.

Affected Environment	Proposed Action	No Action	Alternatives
WILDLIFE	**Transmission Lines** Temporary displacement of wildlife such as mule deer, bighorn sheep and predators. Displacement of songbirds to adjoining habitat. Potential loss of individual mice during construction. Potential loss of desert tortoise habitat from construction until disturbed areas are reclaimed. No increase in potential for collisions of waterfowl with conductors.	**All Elements Scenario 1** Similar impact to proposed action.	**Alternative Transmission Line** Similar impacts to the Griffith-McConnico transmission line, with 10 acres of habitat disturbed and 7.7 acres removed following construction.
	Griffith-Peacock 230-kV Line 40.3 acres temporarily disturbed. Long-term loss of 22.3 acres.	**Scenario 2** Similar impact to proposed action, but in different locations.	**Alternative Gas Pipelines** Similar impacts as the proposed pipeline for the eastern pipeline. The northern alternative would have greater temporary impacts.
	Griffith-McConnico 230-kV Line 12 acres of short-term disturbance. Long-term loss of 12.7 acres for tower structures and access roads.	**Scenario 3** No impact.	
	Peacock-Davis 230-kV Upgrade Minor short-term impacts on bighorn sheep. 15.3 acres temporarily disturbed and 15.03 acres of wildlife habitat lost. No long-term impacts anticipated. Potential minimal impacts to mountain plover, rosy boa and Gila monster habitat.		

Affected Environment	Proposed Action	No Action	Alternatives
WILDLIFE (Continued)	**Power Plant and Associated Facilities** Loss of 65 acres of habitat would not affect the viability of any species. Chemical constituents of wastewater in brine pond may achieve acute or chronic toxic levels over the Plant's life, creating potential mortality of waterfowl and other birds. Low potential for presence of Gila monster and rosy boa. Potential impact on desert tortoise habitat.		
CULTURAL RESOURCES	**All Elements** Potential for damage to native plants traditionally used for food, medicine, epoxy, and basketry by the Hualapai. Potential fr dispersion and depletion of game in traditional Hualapai hunting areas. Potential to disturb access to traditional areas used for burials, pow-wows, ghost dances, and rituals. Potential to disturb natural features associated with important legends and creation stories. Potential to impact springs and traditional camping areas		
	Griffith-Peacock 230-kV Line Potential for the presence of prehistoric or historical resources range from low to moderate.	**All Elements Scenario 1** Similar impact to proposed action.	**Alternative Transmission Line** Similar potential to the Proposed Action.
	Griffith-McConnico 230-kV Line No significant cultural resource impacts anticipated.	**Scenario 2** Similar impact to proposed action, but in different locations.	**Alternate Gas Pipelines** No significant impacts predicted, but potential greater with the northern alternative

Affected Environment	Proposed Action	No Action	Alternatives
CULTURAL RESOURCES (Continued)	**Peacock-Davis 230-kV Upgrade** Likelihood of significant cultural resource impacts ranges from high to low along the transmission line. **Power Plant and Associated Facilities** No significant impacts to cultural properties anticipated.	**Scenario 3** No impact.	
LAND USE AND RECREATION	**Griffith-Peacock 230-kV Line** Designated a Rural Development Area, which permits light and heavy industrial uses. No significant impact to recreational use is anticipated. **Griffith-McConnico 230-kV Line** Located within Rural Development Area and Urban Development Area, which permits light and heavy industrial uses. No significant impact to recreational use is anticipated. **Peacock-Davis 230-kV Upgrade** Line runs through land designated as Rural, Urban and Suburban Development Areas. Section of line that passes through Lake Mead National Recreation Area would be within existing utilities corridor.	**All Elements Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action, but would affect different ownerships and facilities. **Scenario 3** No impact.	**Alternative Transmission Line** Impacts to the Walnut Creek Estates Subdivision during construction. New right-of-way required for a portion of the line. No significant impact to recreational use is anticipated. **Alternate Gas Pipelines** Similar impacts for the proposed eastern alternative.

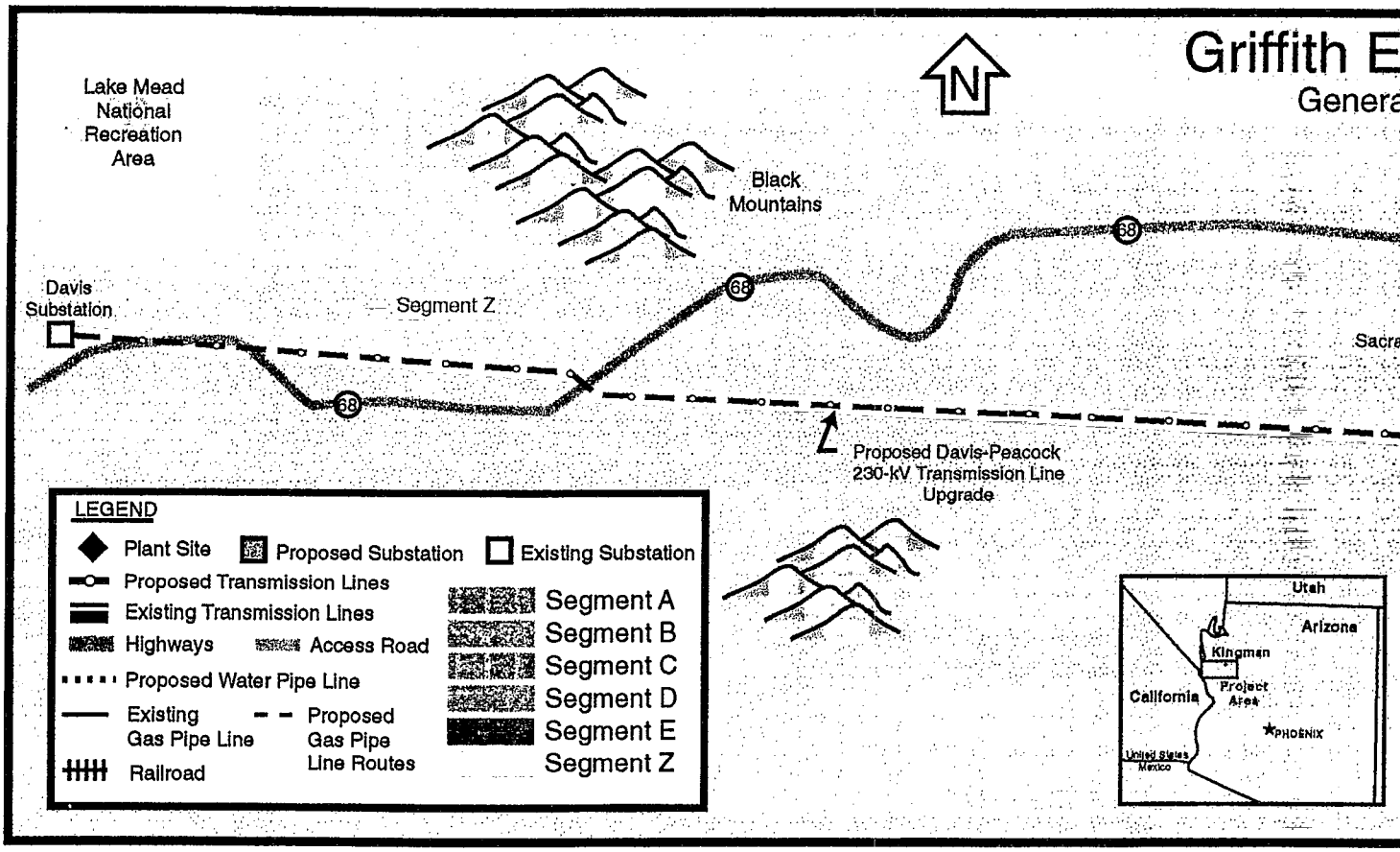
Affected Environment	Proposed Action	No Action	Alternatives
LAND USE AND RECREATION (Continued)	**Power Plant and Associated Facilities** No impacts on existing land zoning status. Facilities are located within the proposed I-40 Industrial Corridor. Temporary disruption of public access during construction. Minimal short- and long-term impacts on recreation.		
VISUAL RESOURCES	**Transmission Lines** Long-term impacts to the visual quality of the landscape from the addition of transmission structures. Short-term impacts from construction activities. Minimal visual impacts from clearing vegetation along the transmission right-of-way. Parts of the line would be visible from single residences and from I-40. **Power Plant and Associated Facilities** Short-term impacts to landscape during construction. Long-term impacts from the addition of the Plant, access road and brine disposal pond, which would be visible from Interstate 40. Steam plume from the cooling tower would be visible from I-40, Oatman Road and residential subdivisions west of Kingman. Long-term impacts from gas pipeline would be visibility of new linear feature. Maximum standard visual range reduction based on two evaluation methods ranged from 4.7 to 3.5 percent. Significant SVR is defined at 5 percent or more.	**All Elements Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action, but in different locations. **Scenario 3** No impact.	**Alternative Transmission Lines** Transmission line visible from Walnut Creek Estates. Use of single pole shaft along existing line would not have significant impacts. **Alternative Gas Pipelines** Eastern: Less long- and short-term impact than proposed action because the alternate route follows an existing linear feature in the landscape. Northern: More short-term impact due to new ground disturbances.

Affected Environment	Proposed Action	No Action	Alternatives
SOCIOECONOMICS	**Transmission Lines** Minimal effects on the local economy. Temporary, short-term demands on local emergency services. **Power Plant and Associated Facilities** Employment impacts include short-term creation of 40-130 jobs during construction and long-term creation of 25 jobs for operation and maintenance. Most of the workforce is expected to be drawn from the local population. Revenues to the local economy over the first 20 years anticipated to exceed $50 million. Minimal potential demand for housing. Increased reliability of power in the area. Some potential impact to public services during construction. Minimal amounts of operational wastes anticipated. The utility industry is moving from development in response to load growth demands and toward development in response to market opportunities. The project could offset more expensive, less efficient generation.	**All Elements** **Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action. **Scenario 3** No impact.	**Alternative Transmission Line** Similar impacts to the Proposed Action. **Alternate Gas Pipeline** The same impacts as the proposed pipeline.
TRANSPORTATION	**Griffith-Peacock 230-kV Line** Existing access roads would be used. **Griffith-McConnico 230-kV Line** Existing access road would be used; some new access would be required.	**All Elements** **Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action, but could affect different transportation elements.	**Alternative Transmission Line** New access roads required in northern part. Route would cross Oatman Road. **Alternate Gas Pipelines** Eastern: Blading and earthwork associated with pipeline construction would likely improve existing road's surface. Northern: Same as proposed action.

Affected Environment	Proposed Action	No Action	Alternatives
TRANSPORTATION (Continued)	**Peacock-Davis 230-kV Upgrade** Existing access roads would be used and may require upgrading; spur roads may be built to conductor pull sites. **Power Plant and Associated Facilities** Traffic disruption on I-40 during construction. Construction of permanent access road to be maintained by the county.	**Scenario 3** No impact.	
NOISE	**Transmission Lines** Noise from construction equipment and vehicles during construction during daylight hours. **Power Plant and Associated Facilities** Noise levels of 85 dBA during construction from equipment and vehicles. Noise from plant quickly diminishes with distance from plant.	**All Elements Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action, but would affect different receptors. **Scenario 3** No impact.	**Alternative Transmission Line** Same impacts as for the Proposed Action. **Alternate Gas Pipelines** Same impacts as for the Proposed Action.
HEALTH AND SAFETY	**Transmission Lines** Minimal effects	**All Elements Scenario 1** Similar impact to proposed action.	**All Elements** Same health and safety impacts as for the proposed action.

Affected Environment	Proposed Action	No Action	Alternatives
HEALTH AND SAFETY (Continued)	**Power Plant and Associated Facilities** Potential for spills of hazardous materials during construction and operation, including aqueous ammonia, hydrazine, di/tri sodium phosphate, antiscalant, sodium sulfite, sulfuric acid, sodium hydroxide, scale inhibitor, sodium hypochlorite, magnesium chloride, line, soda ash, coagulant and coagulant aid, lubricating oils, hydraulic fluids, other hydrocarbons and battery acid. Hazardous and nonhazardous solid and liquid wastes to be produced.	**Scenario 2** Similar impact to proposed action. **Scenario 3** No impact.	
ENVIRONMENTAL JUSTICE	**Transmission Lines** The proposed lines would not have disproportionate effects on low-income and minority populations. **Power Plant and Associated Facilities** The proposed Plant would not have disproportionate effects on low-income and minority populations.	**All Elements Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action, but could differ depending on locations of facilities relative to minority populations. **Scenario 3** No impact.	**Alternative Transmission Line** The alternative would not have disproportionate effects on low-income and minority populations. **Alternate Gas Pipelines** The proposed alternatives would not have disproportionate effects on low-income and minority populations.

Affected Environment	Proposed Action	No Action	Alternatives
EMF	**Transmission Lines** *Corona Effects* Minimal audible noise from transmission lines. Potential for radio and television interference, particularly for the AM broadcast band. Minimal potential for disruption of other communication bands and cellular telephones. Insignificant incremental increases in ozone levels at ground level. *Field Effects--Short-term Exposure* Electric fields of 1.9V/m at the edge of the right-of-way nearest the line. Possibility of nuisance shocks from induced currents near the line. No steady-state current primary shocks possible from induced currents. Potential for secondary steady-state-current shocks from vehicles under the line at or below the secondary shock level, representing a nuisance rather than a hazard. Slight potential for spark discharge shocks. Potential for flashover if conductive objects are carried under lines. No neurobehavioral responses expected. No adverse impact expected from magnetically induced currents and voltages. *Field Effects--Long-term Exposure* Likelihood of long-term exposure very low.	**All Elements** **Scenario 1** Similar impact to proposed action. **Scenario 2** Similar impact to proposed action. **Scenario 3** No impact.	**Alternative Transmission Line** Impacts to the human and natural environment from the construction and junction at the two parallel 230-kV lines are anticipated to be similar to the effects described for the proposed Griffith-McConnico 230-kV line. Effects on the human environment may be greater due to the proximity at residences to the proposed routing of the transmission lines. Effects would be minimal due to distance of lines from residences. **Alternate Gas Pipelines** Potential EMF effects are the same as described for the power plant and associated facilities.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Plant Site
Proposed Substation
Existing Substation
Proposed Transmission Lines
Existing Transmission Lines
Highways
Access Road
Proposed Water Pipe Line
Existing
Gas Pipe Line
Proposed
Gas Pipe
Line Routes
Railroad
Segment A
Segment B
Segment C
Segment D
Segment E
Segment Z
Utah
Arizona
Kingman
Project
Area
California
PHOENIX
United States
Mexico

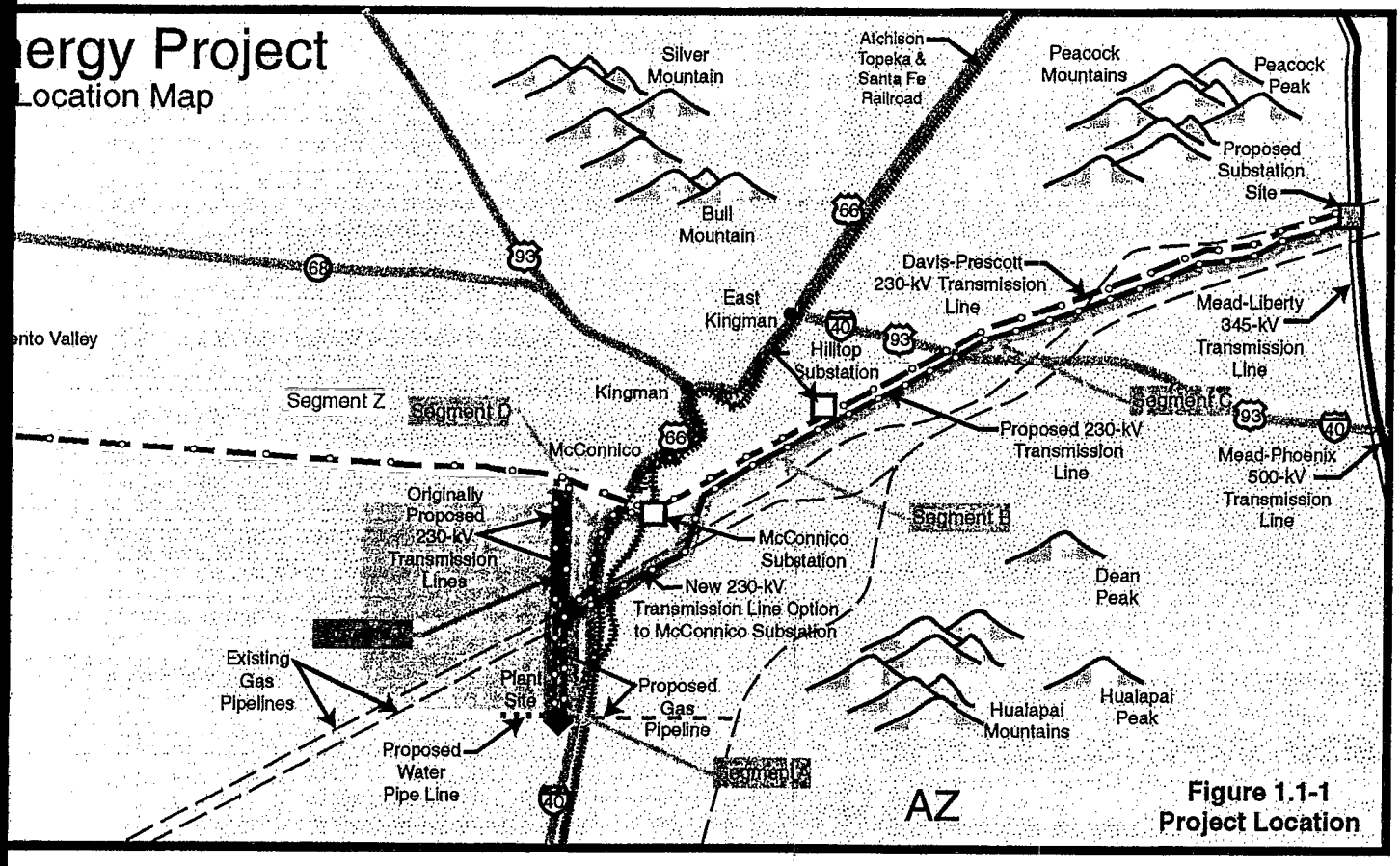

Figure 1.1-1
Project Location

CHAPTER 1
PUBLIC REVIEW OF THE DRAFT EIS

Public comments on the Griffith Energy Project (Project) Draft Environmental Impact Statement (EIS) were solicited from agencies, organizations, and individuals. Comments were received at a public hearing hosted by Western Area Power Administration (Western) in Kingman, Arizona, on December 8, 1998, and in writing. This chapter provides a summary of the public review process and specific responses to the substantive comments received. In addition, this chapter includes a summary of changes made to the EIS as a result of new information, preliminary engineering activities and additional agency coordination.

1.1 PUBLIC REVIEW PROCESS

The Draft EIS was filed with the U.S. Environmental Protection Agency (EPA) and released to the public in late October 1998. A *Federal Register* notice of the filing was published by EPA on November 6, 1998 (63 FR 59988) this began the 45-day public review period. Other announcements included Western's Notice of Availability mailed to individuals and organizations on the project mailing list, paid newspaper advertisements and media stories in response to the Notice of Availability. About 150 copies of the Draft EIS were sent to Federal, state and local agencies, organizations and individuals for review and comment.

Western conducted a formal public hearing in Kingman on December 8, 1998. A Federal hearing officer from Western presided over the proceedings, which were recorded by a court reporter. An open house preceded the hearing to provide an opportunity for people to view informational displays and discuss the project with Western and Griffith Energy personnel. A total for 41 people signed the hearing sign-in sheets. Of those, 9 people provided comments and views on the proposed project and the Draft EIS. In addition, 19 letters commenting on the Draft EIS were received from various agencies and the public. The letters contained 155 substantive comments that are addressed in this chapter. The list of parties who provided written comments is listed in **Table 1.1-1**. Copies of the hearing transcript and\or the comment letters are available upon request from Western's Desert Southwest Regional Office in Phoenix, Arizona (see cover sheet for address).

1.2 CHANGES TO THE EIS RESULTING FROM COMMENTS RECEIVED

Western analyzed and considered all comments and responded to those substantive comments that presented new data, questioned findings or raised questions or issues relevant to the potential environmental impacts of the proposed project, as required by NEPA and other regulations. In developing responses to some comments, Western recognized a need to modify the project or conduct additional analysis to respond to the comment. This section summarizes the major changes made to the Project and\or the Draft EIS where changes were needed to be responsive to the comments.

Need for Power

Several comments questioned the need for the proposed Project or how the need for the Project was defined. In response to these comments, Western has amplified the purpose and need section, addressing Western's need to respond to a request for interconnection from entities planning to compete in a deregulated utility market.

Impacts to Grand Canyon Visibility (Regional Haze)

Some commenters questioned the Project's impact on regional haze. In response to these comments, Western has updated the information in the Draft EIS to reflect additional visibility analysis that has been completed as a result of the Arizona Department of Environmental Quality air permitting process. Current modeling results show that the Project would not have significant effects on visibility at the Grand Canyon. Five years of data (1994 through 1998) are currently being modeled and the results will be included in the air permit application to the Arizona Department of Environmental Quality for the Project. The results of this modeling conducted to the time of the issuance of the Final EIS is summarized in Chapter 2 of the Final EIS.

Brine Disposal Pond

Several comments and questions were received about the brine's potential impact to waterfowl, birds of prey and wildlife. A potential does exist that the brine would become toxic over time as more water evaporates from the pond, leading to higher concentrations of the minerals and metals. Griffith Energy has committed to monitor waterfowl use of the pond and coordinate with the Arizona Department of Fish and Game to develop mitigation, if health or mortality problems are observed. In addition, the EIS has been revised to clarify that no waste from the pond would be removed from the power plant (Plant) site.

Impact on Water Resources

Several comments were received about the impact on groundwater resources from the Plant's use of groundwater for cooling. Based on these comments, the EIS has been expanded to include a water balance discussion, information on other cooling alternatives that were considered and a discussion on the Plant's location versus other locations with ample water supply. This information is presented in Chapter 2 of the Final EIS and in selected responses to comments addressing the water resource impacts. Western views the groundwater use for the Project as adverse, but not significant considering the projected life of the project and the quantity of groundwater available.

Impact on Visual Resources

Some comments questioned the visual impacts of the transmission line crossings of Interstate-40 (I-40) and the proposed Griffith-McConnico transmission line near I-40, south of the North Star

Steel Plant. In response to these comments, Western conducted additional visual analysis, including the development of new simulations. The simulations demonstrate that the new transmission line would be visible from I-40. Western explored other alternative routes for proposed Segment D that parallels I-40 south of the Oatman exit. Western did not identify any routes east of the Segment that were feasible from an engineering perspective. Western believes the visual impacts are not significant for Segment D due to the industrial\manufacturing zoning near the proposed route. The simulations are included at the end of Chapter 2 of the Final EIS.

Traditional Cultural Properties

Both EPA and the Hualapai Tribe commented on the importance to factor the results of traditional cultural properties into the EIS. Surveys for traditional cultural properties within the Project study area have been completed. The results have been summarized in Chapter 2 of the Final EIS.

Draft EIS Index

In response to a comment, a Draft EIS Subject Index was developed and included in the Final EIS.

1.3 CHANGES TO THE EIS BASED ON NEW INFORMATION

Based on preliminary engineering activities, Western determined a need to address three new alternatives in the Final EIS. Western has determined that the new alternatives are not substantial changes to the proposal or significant relevant to environmental concerns and, therefore, did not prepare a supplemental Draft EIS. A copy of Western's determination is available upon request. The alternatives are presented in the Final EIS in the event the public and agencies wish to provide additional comments on the new alternatives to be considered in Western's decision making. The new alternatives are addressed below.

Northern Gas Pipeline Alternative

An alternative route for the proposed natural gas supply pipeline between the Plant site and the Transwestern Gas Company supply line is being considered. This alternative would travel due north from the Plant site either in the county road right-of-way (ROW) located 1/2 mile east of the western boundaries of Township 20N., Range 17W., in Sections 6, 31, 30, and 19 or near this ROW in a separate easement. This route is shown on **Figure 2.2-1**. Since this alternative deals with one complete component of the Project, the alternative is presented in Chapter 3 of the Final EIS.

Temporary Haul Road Alternative

Based on input from the Burlington Northern Santa Fe Railroad, an alternative temporary haul route for the delivery of major, heavy equipment to the Plant site has been developed to better use existing local rail facilities. Under this alternative, instead of building a new temporary area to offload equipment at the rail siding due east of the Plant site, equipment would be offloaded at an existing facility at a truckstop approximately six miles north of the Site (see **Figure 2.2-1a**). This alternative addresses a change to the temporary haul road east of I-40 as proposed in the Draft EIS and is included as inserts in Chapter 2 of the Final EIS.

Transmission Line Structure Alternative

In the Draft EIS, Western proposed to use the same structure type for the Griffith-Peacock 230-kV transmission line that was used for the existing Davis-Prescott transmission line in the portion of the proposed right-of-way (ROW) that parallels the existing Davis-Prescott line. However, based on preliminary engineering activities, Western determined that it does have an existing design to match the same structure type and carry heavier conductors needed for the proposed Griffith-Peacock line. Western determined that additional structure options were needed for the Griffith-Peacock line to meet the design objectives for the Project. In response, Western has added a single pole transmission alternative for the proposed Griffith-Peacock 230-kV transmission line, Segments B and C, where it parallels the existing Davis-Prescott line. The new information in the Final EIS is limited to the results of visual analyses, since the steel lattice structure was proposed to reduce visual intrusion. Environmental impacts from this alternative to other resources would be similar or less than the proposed action. This alternative addresses a change to the proposed Griffith-Peacock line proposal and is addressed as inserts in Chapter 2 of the Final EIS.

TABLE 1.1-1
LIST OF PARTIES WHO PROVIDED WRITTEN COMMENTS

Comment #s	Commenter	Representing
1-7	Kerry Christensen, Ph.D.	Self
8-12	Jack Ehrhardt	C.E.R.B.A.T., Inc.
13-27	Dennis E. Roberts	City of Kingman
28	Unknown	
29-43	Carol S. Anderson	Mohave County Board of Supervisors
44-46	Albert C. Leenhouts	Self
47	James Butcher	Self
48-50	Dean A. Barlow	Self
51-54	Elaine E. Miller	Self
55-62	Bruce Asbjorn	Bureau of Land Management
63-84	Rebecca Peck	Bureau of Land Management
85-90	Paul Hobbs	Bureau of Land Management
91-109	Duane J. Aubuchon	Arizona Game and Fish Department
110-112	Michael Kondelis	Mohave County Public Land Use Committee
113-136	Deanna M. Weiman	United States Environmental Protection Agency - Region IX
137	William J. Burke	National Park Service
138-144	Earl Havatone	Hualapai Nation Office of the Chairman
145-151	Robert L. Arnberger	National Park Service
152-155	Richard Beebe	Self

1.4 EIS COMMENTS AND RESPONSES

The comments and responses are organized by commenter, then comment number, as described in Table 1.1-1. Comment numbers are for comment letters received and comment letters (e.g., "A") correlate with comments received at the public hearing.

COMMENTER	ORGANIZATION	CITY/STATE
Kerry Christensen, Ph.D.		Kingman, AZ

No.	Comment	Response
1.	This letter is to provide comments on the Draft Environmental Impact Statement for the Griffith Energy Project in northwestern Arizona. In general, myself, my family, my friends and, I believe, the majority of Mohave County are not interested in degrading our environment for the profit of Griffith Energy Limited Liability Corporation (Griffith). Just look to their name to understand their feeling toward protection of the environment; Limited Liability. My children's air, water and environmental aesthetics are worth far more than a few jobs in Mohave County.	Your comment has been noted.
2.	We feel that the emissions from the power plant has the potential to negatively impact Mohave County's economic security by increasing regional haze entering Grand Canyon. We feel that the emissions from the plant will reduce the beauty and attraction of Grand Canyon and therefore reduce our tourism potential. The U.S. Government just spent untold millions of dollars to study air quality in Grand Canyon (Grand Canyon Visibility Transport Commission) and concluded that there is a significant negative effect of regional haze on the public's Grand Canyon experience. Why should we allow Griffith to make it worse? Our air quality is already affected enough from the Mohave generating station in Laughlin, Nevada. Enough electricity is already being generated without creating another source of pollution.	A more detailed analysis of potential impacts from the Griffith Energy Project to the regional haze entering the Grand Canyon has been completed. Please see Comment Number 151. The purpose of the Griffith Energy Project is not to fill an identified need for additional power. Instead, it is intended to provide an economical and efficient source of power that could be used to meet either current or future market demands for wholesale energy in the deregulated energy market being developed in response to federal and state mandates. Even though the demand for electricity is expected to continue to increase over time according to the Western System Coordinating Council and other industry and government projections, the Griffith Project is not dependent on any such growth. Please see the Purpose and Need addendum in Chapter 2.
3.	Furthermore, we feel that consumption of 3,300 gallons of water per minute will negatively affect springs and water supplies to Mohave County. How long can you pump that much water before northwestern Arizona goes dry? For God's sake, this is a desert!	A water balance analysis of the Golden Valley sub-basin of the Sacramento ground water basin has been prepared and is included as an addendum to the Draft EIS in Chapter 2 of the Final EIS.

No.	Comment	Response
4.	We also feel that the proposed brine pond, which has the potential to reach toxic levels, is too hazardous to wildlife and the citizens of Mohave County. How will they dispose of toxic waste? Will it be transported by train right through the cities and towns of Mohave County?	The discussions on pages S-6, S-8, 2-32, 2-34, 4-10, and 4-28 of the Draft EIS refer to metals concentrations and are correct. Concentrations of salts and metals in the brine disposal pond are expected to increase over time as the water in the pond evaporates and levels of metals could possibly reach toxic levels. A separate discussion on page 4-28 is also correct; the brine pond total dissolved solids or salt content is expected to be less than sea water, so salt build-up is not expected to be a source of toxicity to wildlife. Also see response to Comment 13. As stated on page 4-10 of the Draft EIS, both the entire plant site and the brine pond are to be fenced to control both human and wildlife surface access. Griffith Energy will consult with Arizona Game and Fish Department (AGFD) in the selection and construction of a fence to enclose the brine pond which will minimize passage of wildlife species of concern. An additional mitigation measure has been added outlining Griffith's commitment to monitor water fowl use of the pond and coordinate with AGFD to develop appropriate mitigation if health or mortality problems are observed.
5.	Many species that are important to myself and the general public such as the Bald Eagle, waterfowl, Golden Eagles and various hawks are known to inhabit or migrate through the project area. We know that individuals of these species will be lost at the pond and also due to collisions with power lines. These losses are unacceptable to myself and many others.	The comment has been noted. Please see page 4-30 paragraph one of the Draft EIS. If problem areas of avian collisions with the new line are documented, Western would consult with the Bureau of Land Management, Fish and Wildlife Service and AGFD to identify potential mitigation measures to reduce or eliminate this impact. However, the potential for collisions would be minor based on the fact that the new line in Segments B and C would be placed in the same plane as the existing line thus increasing the visibility of the line to birds. Segment A, B and D or E would traverse areas that currently do not have transmission lines. Therefore, their presence would increase the potential for avian collisions. However, these new lines are not anticipated to have greater collision potential than the minimum potential represented by other similar lines in the area.

No.	Comment	Response
6.	Before massive developments in Las Vegas, Phoenix and other cities in the west, northwestern Arizona had some of the most spectacular scenery and vistas in the world. With development came eyesores such as transmission lines. Northwestern Arizona, in general, is overcrowded with transmission lines. **We don't want any more!** Our lands have been scarred enough. We do not believe that the need is great enough to justify more transmission lines.	Your comment has been noted.
7.	We do believe, however, that the true purpose and need of the project is for the project proponents to make a profit while they degrade our environment. **We don't need it!** Finally, we feel that this issue should be left to the decision of the public. Let us vote whether we want this polluting white elephant or not. Let us vote on whether we want our property taxes to increase to pay for the infrastructure that Mohave County has supposedly committed to ($5 million we believe). Even one of the three County Supervisors does not want the project (Ms. Carol Anderson), and we feel she is the most enlightened member of that board. Give us a voice or give us our environment!	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
Jack Ehrhardt	C.E.R.B.A.T. Inc.	Kingman, AZ

No.	Comment	Response
8.	The comments I would like to put on record regarding this gas-fired plant are this. I wholeheartedly object and protest this plant being built and allowed to operate, producing about 1900 tons of emissions a year. Reasons are that clean, renewable, green energy is available and your organization and the Mohave County Economic Authority have not made an attempt to bring this energy option to the citizens of Mohave County.	In a deregulated utility environment, market forces will dictate the type of generation developed. Today's market indicates that there is ample demand for low cost power. The technology proposed for the Griffith Energy Project is the most cost effective and efficient power technology available. Based on a recent Bonneville Power Administration Market Study, the levelized power costs are projected to be about 2.1 cents per kilowatt for a combined-cycle combustion turbine, 5.0 cents for a wind farm, and 8.2 cents for central station photovoltaic power plant. However, even with higher power costs, some marketers have began efforts to market renewable-based generation, which has led to the development of wind farms. As a result of AB 1890, California businesses, residents and all public entities have had the ability to choose from whom they buy their electricity since April 1998. A number of companies now offer electricity from renewable electricity generation -- including cleaner power sources such solar, wind, geothermal, biomass, and small hydroelectric sources. In the deregulated market, consumer preference will ultimately dictate the type of generation developed and marketed. Also, see response to Comment No. 12.
9.	Based on commitments made by global governments at the International Kyoto Climate Summit we are to reduce our CO_2 emissions to levels far less than we are producing in this county today. The United States, with less than 5% of the world's population, uses one-third of the world's resources and causes almost half of its industrial pollution. Approving another polluting power plant in Mohave County has a negative effect on our ecosystem and contributes to the present unjust and inequitable social attitude we portray to other communities that we demand do not create pollution.	Your comment has been noted.

No.	Comment	Response
10.	Because our citizens' voices are not allowed to be a significant force in the bringing of business that are invited to come here, we are not allowed to be a community that can be energy sustainable and responsibly humane in our energy pollution production. Our county government funded economic authority, which is not required to give any disclose of its costs or businesses it is soliciting to come to our county, has a history of bringing polluting industry. That includes a steel mill that was in violation of the clean air act for years, costing the taxpayers thousands of dollars in compliance reviews, and trying to bring waste incinerators that would have California's waste shipped here to be incinerated, creating horrific emissions. The pilot plant, given a variance by the state under pressure from influential county representatives, was shut down for having poisonous emissions by the U.S. Environmental Protection Agency and responsible citizen watchdog effort. Point being the same group promoting the Griffith Power Plant, and the same ADEQ representative who ineptly approved a waiver from the air quality permit process for a waste incinerator are promoting this plant as environmentally acceptable.	Your comment has been noted.
11.	The tradeoffs for the positive side do not exist. When ADEQ representative Prabhat Bhargave states this plant "a very well-controlled facility" in terms of the emission control devices, it means absolutely nothing, or worse. He has stated a federal shut down waste incinerator was state-of-the-art.	Your comment has been noted.

No.	Comment	Response
12.	Truly the natural resources this power plant will effect - the air we breathe (putting 20,000 tons of pollution into our air over ten years), and depleting our ground water while creating wealth for the Griffith Power Plant stockholders -- is unacceptable to many of us. I question your authority to do these things to us without giving our community the option to have clean, renewable energy plants brought here (i.e., solar, wind...), and not allowing us to be globally responsible to the reduction of CO_2 emissions as agreed to at the Kyoto Climate Summit. These natural resources belong to all of us, including the majority of the citizens who are at poverty level in our county. It is not okay to pacify them with a plethora of prefabricated benefits to us! I would appreciate you addressing these concerns, and not act as if we do not know the influence global corporations dominance has over the majority of people and their environment.	Because the purpose of this plant is to provide an economic and efficient source of energy in response to the deregulated energy market, more costly and inefficient sources of energy (such as solar and wind) were not considered as alternatives to this project. Therefore, the impacts associated with these forms of energy, which are different but not necessarily less than the proposed technology, were not evaluated. However, most states are requiring a certain amount of renewable energy to be included in the deregulated market through subsidies funded at least in part by consumers. The Draft EIS contains a discussion on the project's potential effect on global warming in Section 4.3.2.1.4 which indicates that there would be a likely net positive effect from this and other similar gas-fired power plants.

COMMENTER	ORGANIZATION	CITY/STATE
Dennis E. Roberts	City of Kingman	Kingman, AZ

13.	Sec. 2.1.1.2.1 - Page 2-4 - 2nd paragraph: How frequently do the brine disposal ponds have to be drained and the solids removed? How are the solids disposed of? (Also applies to Sec. 4.2.2.1.1 - Page 4-7 top of page).	Operation of the Brine Disposal Pond is not expected to involve the removal of brine or precipitates. The site would act as an evaporation pond. The pond is designed for a 20-year life at maximum power production which is defined as operating at maximum capacity (650 MW), 24 hours/day, 365 days/year. The design also includes adequate volume to contain the 100-year 24-hour storm and precipitates which build up over time. Since the plant will not operate at the maximum but at varying rates throughout the year, the current design is expected to be adequate for the average water use expected for the 40-year life of the plant. In the event that additional brine storage is required to sustain the plant's operations, another impoundment cell will be built to provide the needed capacity.. At closure, the pond would be capped with a geosynthetic liner and 4 feet of plant growth medium. No materials will be shipped offsite; therefore, pond operations would not produce a health risk to the community from transportation of wastes.

No.	Comment	Response
14.	Sec. 2.1.1.2.2 - Page 2-4 - 3rd paragraph: It is indicated that access to the tap and metering facility on the EPNGC pipeline would be via Walnut Creek Road. Are there plans to improve and signalize the at-grade railroad crossing?	Currently, there are no plans to improve and signalize the at-grade railroad of the Walnut Creek Road. Following a 1-2 month period of facility construction where the daily crossing of the railroad by several construction-related vehicles is anticipated, crossings by vehicles associated with facility operations would be limited to 1-2 vehicles per day on average. This small increase in traffic would not warrant changes at the crossing.
15.	Table 2.1-4 - Page 2-20 - item 11: Who are the monitoring studies shared with?	The monitoring studies on effects of audible noise and electrostatic and electric magnetic fields are normally published upon completion. The results will be shared with any interested part upon request.
16.	Sec. 3.1 - Page 3-2 - Geologic Hazards - The Arizona Earthquake Information Center at Northern Arizona University has published Earthquake Hazard Evaluation Mohave County Arizona - July 30, 1997.	The referenced document has been reviewed and information added to the EIS. See addendum for Section 3.1.
17.	Sec. 3.11 - Socioeconomics - page 3-58 - It is questionable whether Mohave County as whole should be used as the study area - as the true impacts of the project are to the Golden Valley and Greater Kingman areas.	The socioeconomic analysis study area included data for Mohave County as the overall political jurisdiction in which the project is located, and baseline data was also provided for the City of Kingman. Information for other areas of the County, such as Bullhead City, Colorado City, and Lake Havasu was not included. County and city-wide information is the typical level for socioeconomic data, and therefore is generally used for estimating more localized social and economic impacts. The socioeconomic impact analysis focuses on the Kingman area and the I-40 industrial corridor in Golden Valley. The socioeconomic impact assessment, beginning on page 4-53 of the Draft EIS, identifies anticipated employment, housing, and utility and service impacts projected to occur in the project-specific Kingman and Golden Valley region.

No.	Comment	Response
18.	Sec. 3.11 - Socioeconomics - page 3-67 - Urban/Domestic Water: The withdrawal of up to 122,560 acre feet of ground water over the 40 year life of the plant is of concern. It should be noted that the City of Kingman owns 44 well sites in Townships 19 & 20, Range 18 West. While the City of Kingman currently has not developed any of these well sites, the Sacramento Basin Aquifer continues to be considered as a secondary water resource for the Kingman Municipal Water System. (Also applies to Sec. 4.2.2.1.1) In general, it is questionable whether or not any operation requiring high quantities of water should be developed in an area totally dependant upon ground water.	Information on the City of Kingman's well sites in the Sacramento Basin has been added to the discussion in Section 3.11 and is included in Chapter 2. See response for Comment No. 3.
19.	Table 3.11-12 - Page 3-67: Kingman's Groundwater/well capacity is currently at 15.2 MGD; and currently there is a new Storage Tank under construction that will raise capacity to 9.9 million gallons.	Table 3.11-12 has been revised to reflect information presented in the comment. See Chapter 2 of the Final EIS.
20.	Table 3.11-13 - Page 3-67: This describes Kingman's Hilltop Wastewater Treatment Facility. There is a 2nd facility located in Section 26, Township 21 North, Range 17 West. This 2nd facility is an aeration lagoon facility having a design capacity of .53 MGD and is currently operating at about 75% capacity.	Table 3.11-13 has been revised to include the second wastewater treatment facility. See Chapter 2 of the Final EIS.
21.	Sec. 4.2.2.1 - page 4-6 - next to last paragraph: it is stated that subsidence from dewatering is not expected due to the depth of the existing water table. With a decrease of the water table by an estimated 109.5 feet at the wells - supporting information on how this determination was made should be included in the report.	Additional information has been added regarding subsidence potential. See Chapter 2 of the Final EIS.

No.	Comment	Response
22.	Sec. 4.3.2.1.1 - Regulatory Status/Project Emissions: The release of more than 100 tons per year of nitrogen dioxide, carbon monoxide, and inhalable particulates is of concern. While these releases may be within current limits and BACT, both the short term and long range effects are of concern. Sec. 4.3.2.1.2 indicates compliance with air quality standards have been determined using dispersion modeling. The compounding affects of this project with existing and future facilities will impact air quality in the immediate area. This methodology does not appear to take into account the inversion conditions that exist during the cooler fall and spring months, which are evident around the existing truck stops, North Star Steel, and through out the area along unpaved roadways. A more detailed evaluation and/or discussion of the air quality and visual impacts is warranted. It can be anticipated that the exhaust from the stacks will be visible throughout the Golden Valley and Greater Kingman Area, based on the visibility of the exhaust from the Laughlin Generating Plant and the North Star Steel Facility.	Inversions were incorporated in the air quality analysis. Also, visibility of the emissions from the Griffith Plant would not be similar to those from North Star Steel and the Laughlin Generating Plant. The emissions from the stack would generally not be visible (primarily NO_x and CO) but a steam plume from the cooling towers could be visible periodically. This has been discussed in Section 4.9.2.1 in the Draft EIS. Also, as emissions are converted to ammonium compounds over time and distance, they potentially could contribute to regional haze. This has been evaluated at the most sensitive receptor in the area, the Grand Canyon, and has been discussed in Section 4.3.2.1.3 of the Draft EIS. The regional haze analysis has further been refined and is discussed in Chapter 2 of the Final EIS.
23.	Sec. 4.9.2.1 - Page 4-47 - 1st paragraph: It is indicated that the Plant site would be designed to cause the least visual intrusion. There is no discussion if the State, and County dark sky regulations have been evaluated and how the facility would impact dark sky issues. The 2nd paragraph does not mention the fact that the lighting will be visible from the residential areas of Golden Valley and the City of Kingman. It can be anticipated that this will be the case, as the lights from North Star Steel are visible from these areas.	A description of proposed outdoor lighting fixtures has been added to Section 2.1.1.1 of the EIS. The discussion of potential impacts to result from outdoor lighting in Section 4.9.2.1 (3rd paragraph, last 2 sentences) has been modified to reflect impacts from use of lighting described in Section 2.1.1.1.
24.	Sec. 4.9.2.1 - Page 4-47 - 3rd paragraph: It is stated that the topography south of Kingman would screen the plume from views within residential areas in the city. This is a questionable statement.	There are several butte landforms of approximately 3600 feet in elevation located between one to two miles south and southeast of residential areas in Kingman. These landforms are in the foreground of views from the city and will screen the plume, which will rise from the plant located at an elevation of 2500 feet more than eight miles southeast of the city. The plume would be obscured by distance as well as the rugged topography.

No.	Comment	Response
25.	Sec. 4.10.2.1 - Page 4-55 - 1st paragraph: Revenues are anticipated in excess of $50 million: what are the anticipated public costs to providing service to the facility over that 20-year time frame, i.e., roadway construction/maintenance, public safety, fire/emergency, medical, etc.?	In support of the Griffith Project and other users in the I-40 Industrial Corridor, Mohave County will be providing road improvements and a water supply system. Apache Road will be constructed from the Griffith Interchange to the northwest corner of the Project site. The estimated cost of Apache Road is in the range of $750,000 to $1 million depending on final design criteria. For the Griffith Project, Mohave County will also be providing an unpaved haul road that will built from I-40 to the northwest corner of the Griffith Project Site to provide temporary access for the heavy equipment needed for construction. The cost of this haul road is estimated in the range of $100,000 to $200,000. A water system with production capability of 6000 gpm will be developed and constructed by the County to support water users in the Industrial Corridor. The Griffith Project will subscribe for approximately 80% of the production capacity of the water system. The estimated cost of the water system, assuming 6 wells are developed, is in the range of $3.5 to $4 million. Griffith Energy will supply its own fire protection facilities, therefore no cost for fire protection costs will be borne by Mohave County on behalf of the Project. There are also no additional costs anticipated for medical or other public services as a result of the Griffith Project.
26.	Sec. 4.13.2 - Page 4-68 - 1st paragraph: It is stated that a Hazardous Materials Inventory Statement and Management Plan would be developed and submitted to responding fire departments. As noted in the report, the plant site is not serviced by any fire district/department.	Corrections to Section 4.13.2 are reflected in the **Final EIS Corrections Table.**

No.	Comment	Response
27.	Sec. 4/14.2 - Page 4-70 - The UGA used in this report is Mohave County; the results of which reflect that the proposed project would not have a disproportionately adverse effect on minority and low-income populations. Would this hold true if the UGA were Golden Valley, Yucca, and the Greater Kingman Area, which is the primary impact area?	The purpose of the Unit of Geographical Analysis (UGA) is to provide baseline minority and low income population data *against which* the minority and low-income population data of the affected area, namely Golden Valley, Yucca, and the Greater Kingman Area, is compared. The UGA must be larger than the area impacted, in this case the UGA is Mohave County, otherwise there would be no comparison. One would essentially be comparing the data from the impacted area with data from the impacted area. In such an analysis no disproportionate impacts to low-income and minority populations would ever be identified, even if they did indeed exist.

COMMENTER	ORGANIZATION	CITY/STATE
Anonymous		

No.	Comment	Response
28.	Using that much water is fine but it must be recycled back into the aquifer. Water is too scarce in the desert.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
Carol S. Anderson	Mohave County Board of Supervisors	Kingman, AZ

No.	Comment	Response
29.	I am writing you on behalf of the citizens in Mohave County who have taken the time to contact me with their comments regarding the Environmental Impact Study of the "Griffith Energy Limited Liability Corporation" (Griffith). They are uncomfortable in addressing the Public hearing and/or feel that publicly stating their concerns may jeopardize their jobs or businesses in the area. I apologize for the anonymity these people have requested. I have enclosed copies of phone messages and letters that I have received or those who agreed that I do so.	Your comment has been noted.

No.	Comment	Response
30.	I apologize to you for the format I am using, in that it is not the same as what was offered at the EIS Public Hearing, 12/8/98, in Kingman. This format is the best way for me to incorporate their comments. I ask that you take the information presented herein as seriously as you would what is submitted on your forms.	Western has reviewed the comments provided. The comments consist of copies of letters, telephone records, and E-mails provided to Mohave County Supervisors Anderson and Johnson. Most of the comments are dated before the Draft EIS was issued in October 1998. The comments express Mohave County constituents' views on the proposed Griffith Energy Project. Western believes the views are consistent with the issues raised during the scoping process held for the EIS. In cases where a constituent has offered specific comments on the EIS, Western has addressed and responded to the comment. All the comments provided have been noted and will be taken into consideration in Western's decision making.
31.	The study just covered the actual projected use for the Griffith project. It did not take into account the current users pumping from that aquifer, nor the potential users for that area. For example, a cement fabrication facility is interested in locating their new plant on the adjacent property to Griffith. Their water use was not calculated in the impact to the aquifer, along with Griffith. Additionally, Mohave County recently rezoned that area, the adjacent area of approximately 10 sections of land and southwesterly on Interstate 40, as "Industrial". There were no "qualifiers" put on that Industrial zone regarding water usage of prospective industries, nor were any environmental issues placed as guidelines in that rezone. Those prospective industries could have additional impacts on this same aquifer and land. These potential impacts are part of the whole picture and should be identified as possible impacts on the aquifer.	The Council on Environmental Quality guidelines for analyzing cumulative impacts require that "past, present, and reasonably foreseeable actions" be considered. The Draft EIS did address other water users (past, present and future) in the Sacramento Basin. Past and present water users were included in the baseline conditions described in Section 3.2.1.1.1 of the Draft EIS and were used as the existing conditions against which the impacts of the project were assessed in Section 4.2.2.1.1 of the Draft EIS. The cumulative effect of adding other water users in the future as a result of future development of the I-40 Industrial Corridor and other uses is discussed in Section 4.16 of the Draft EIS. While some potential projects in the area are currently being discussed (such as the prison), plans for them have not been finalized (i.e. plans or permit applications have not been filed). Therefore, the likelihood for them to proceed and the quantification of their potential effects are not reasonable to assess beyond the level described in the Draft EIS.
32.	Additionally, a recent radio newscast reported that an area property owner is still negotiating the sale of this land for a private prison that could house up to 1,000 or more prisoners. The anticipated water use could be 3,000 acre feet per year. This water use is over and above Griffith's projected pumpage.	See response to Comment No. 31.

No.	Comment	Response
33.	The aquifer is reported to "recharge" at 3,000 acre feet per year. That is the projected amount to be used by Griffith. This does not take into account the above issues. Therefore, over time, this aquifer could see "overdraft", land subsidence and negative impacts to endangered or threatened species.	See response to Comment No. 3.
34.	With this information, why hasn't Griffith looked at a site closer to the Colorado River and its more available "renewable" supply? Shouldn't this also be considered in the EIS?	Using water from the Colorado River for the Griffith Project at its current site was not considered viable for the reasons outlined in Section 2.2.1.2 of the Draft EIS describing alternatives considered but dropped. The reasons other power plant sites were not considered viable are also outlined in Section 2.2.1.2 of the Draft EIS. Sites closer to the Colorado River specifically were not considered for two primary reasons: 1) any location nearer the river would also be closer to either the Grand Canyon or Lake Mead National Recreation Area, and 2) siting outside the Kingman area would not provide the secondary benefits to the local transmission system.

No.	Comment	Response
35.	I appreciate the recycling of water, to reduce the withdrawal from the aquifer. I also understand that the retention ponds for this water will be lined with a liner that will prevent any leakage, or seepage into the underground aquifer, at least for the life of the plant. Comments at the Public Hearing addressed the wildlife and fowl that may be attracted to this "artificial" water source, considering the scarcity of water in that desert area. There were questions as to what effect the contact or ingestion of this water and its residue from the Griffith process would have on these animals. They called it "chemical soup"? Will these ponds be fully fenced and covered to prevent wildlife, fowl, and humans from access to this "chemical soup"? I also understand from conversation with Griffith representatives that this water, and whatever settles out such as a "sludge," will remain in these ponds for the life of the plant and will then be covered over, leaving all these chemicals in place. What will then happen with the liner.... will it forever stay intact, not allowing this "chemical soup" to leak and contaminate the underground aquifer? There were also questions raised about earthquakes, especially with the known history of the effects of earthquakes in our area, on both these retention ponds and/or the aquifer.	Your comments have been noted. See responses to Comments No. 4 and No. 13. A description of the proposed brine pond's construction and operations is provided. See modification in Section 2.1.1.2.1 of the Final EIS. The potential effect of an earthquake on the valley aquifer is unknown. This plant has a 40-year projected life. In the event that additional brine storage is required to maintain operations, Griffith would build a second pond to the regulatory standards at the time it is constructed. Section 3.1 indicates that the site lies within a seismic risk zone of 2, with moderate damage projected in association with the maximum earthquakes which could occur. There are no known faults underlying the Griffith facility. The largest recorded earthquake within a 200 km radius occurred 176 km to the west and had a magnitude of 6.1 on the Richter scale. These risks would not pose a threat to the integrity of the Brine Disposal Pond liner. Wave action associated with a seismic event will be contained by the freeboard, or the extra space available between the maximum water level and the crest of the embankment. The pond is designed for a 20-year life at maximum power production which is defined as operating at maximum capacity (650 MW), 24 hours/day, 365 days/year. The design also includes adequate volume to contain, the 100-year 24-hour storm and precipitates which build up over time. Since the plant will not operate at the maximum but at varying rates throughout the year, the current design is expected to be adequate for the average water use expected for the 40-year life of the plant. In the event that additional brine storage is required to sustain the plant's operations, another impoundment cell will be built to provide the needed capacity.
36.	I have received comments/questions about the loss of our dark night sky and light pollution. We are seeing a loss of our night sky and visibility of stars with the light pollution from North Star Steel's plant, as well as that from Laughlin, Nevada. Will this plant add to that light pollution with their night time lights?	See response to Comment No. 23.

No.	Comment	Response
37.	An area resident, Mr. M.K. Graham has a background of the types of engines for the industry which will be used at Griffith. He is concerned about the possibility of engine failure and air contamination. The winds are primarily from the southwest, and blow toward Kingman. (Our area trees prove this fact.) What effect will be had on Kingman and the nearer neighbors in this event? The same concerns are asked about the emissions from the plant, under any other type of accident.	Please refer to Figure 3.3-1 of the Draft EIS for a graphic depiction of the wind speed and direction at the Griffith Power Plant site. Because of differences in surrounding topography, the prevailing winds at the Plant Site would be different than at Kingman - predominantly from the northwest and the south-southeast. For a discussion of the air emissions associated with an emergency plant shut-down, see the addenda to Section 4.3.2.1 in Chapter 2 of the Final EIS.
38.	We see the effect of our already threatened clean air with the pollution from Los Angeles, and a small part from the Mohave Generating Station which provide molecules for other pollutants to attach to. Would these emissions provide more of the same?	The emissions from the Griffith Project would be very different from the Mojave Plant. The Griffith power plant would burn natural gas, Mohave burns coal.
39.	Residents who have moved here for the clean, clear sky feel that this is threatened by adding anything more to the atmosphere.	Your comment has been noted.
40.	There will be visual impacts, interruption of radio (and cell phones?) reception and transmission, etc. These concerns are also important to area residents.	Additional visual analysis has been conducted based on this and other comments. The results of the analysis are presented in the Addenda section in Chapter 2. The visual impacts would not be significant based on the analysis. Radio reception and transmission impacts were addressed in Section 4.15 of the Draft EIS. Effects to radio reception and transmission will be confined to existing and proposed rights-of-way. Any problems encountered within or adjacent to the rights-of-way would be addressed and corrected by Western. Transmission line electric and magnetic fields do not affect cellular phone transmission and reception.
41.	You will notice that many of the comments in favor are from areas that will be affected by the Griffith site. I ask that you seriously consider those who will be directly affected by this site. They are the ones who have the most at stake. To quote Dean Barlow from Lake Havasu City, "Don't trade quality of life for a few jobs."	Your comment has been noted.
42.	Another individual, Frank Poulia (sp?), was concerned about the loss of 65 acres of habitat with no way to measure the loss of wildlife at this time nor the effect of this loss in the future.	Your comment has been noted.

No.	Comment	Response
43.	Why not put our efforts into more environmentally friendly power generation, such as wind or solar, is another question I have been asked by quite a few people.	See response to Comment No. 8.

COMMENTER	ORGANIZATION	CITY/STATE
Albert C. Leenhouts		Kingman, AZ

44.	I would like to express to you two major concerns about the proposed Griffith Power Plant project. **The first is the projected water use.** My estimate is that when this plant runs at capacity, it will use up to 2450 gallons per minute, or just over 3.5 million gallons per day. This estimate is based on the following: The 1500 MW Laughlin plant, running at capacity, uses, in the summer months, 17000 gallons per minute for evaporative cooling. The proposed Griffith plant is rated at 650 MW (Approximately 10 times the amount used in the City of Kingman), and should use proportionately less. In addition, this plant will use hybrid gas turbine/steam technology, and therefore the water use is significantly reduced, possibly by as much as 2/3. But that still comes to 3.5 million gallons per day!	Your comment has been noted.
45.	That is similar to the total residential water use in the city of Kingman! We should not permit a tax break for this; instead, a tax surcharge appears to be in order. **The second concern is the proposed location.** At the Griffith Exit on Interstate 40 is the Praxair plant that manufactures a highly toxic industrial gas. Serious industrial accidents do happen (Henderson, 1988), and terrorist activity is a reality. Human decency requires that, in the case of a major accident at this plant, the people working in the surrounding area should have at least 5 minutes to evacuate, and have the necessary escape routes available - certainly not the Griffith exit! At a windspeed of 25 miles per hour 5 minutes amounts to just over 2 miles. No major facility should therefore be constructed within 2 miles of the Griffith exit.	See the addendum to the Health and Safety discussion in Section 4.13.2 - Occupational Safety and Health.

No.	Comment	Response
46.	In the current ethical climate - and I am not sure that today is different from any other period in history - all corporations will conceal and twist information when large amounts of money are involved. Most will lie, at one time or another. Combine this with Mr. Van Brunt's irrational obsession with rapid industrial growth, and you have a situation where you can make a positive difference. I sincerely hope that you will.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
James Butcher		Lake Havasu City, AZ

47.	The two 230-kV Transmission lines proposed by WAPA would cross Route 40, one continuing northeast connecting to the Mead-Liberty Transmission lines and the other turning north paralleling Route 40 for over 3 miles and connecting to the McConnico Substation. The visual effects of these power lines obscure the mountains and natural beauty of our area to Tourist and potential companies that may move or expand there facilities to our Industrial Corridor.	The impact analysis for this segment of the proposed transmission line was evaluated from additional Key Observation Points (KOPs) in response to Comment No. 62.

COMMENTER	ORGANIZATION	CITY/STATE
Dean A. Barlow		Lake Havasu City, AZ

No.	Comment	Response
48.	According to the EIS, the proposed plant will consume between 3 and 5 thousand acre feet of ground water per year. The result will be a drop in the water table of 109 feet over 40 years or 2.7 feet per year. The EIS would appear to dismiss this loss as a minor item. The fact that the water table will be drawn down over time is evidence to me that we are talking about a non-renewable resource. Where are the 4 thousand acre feet of recharge water to come from? Certainly not the 7 to 12 inches of rainfall this area gets per year. If this project were to be built on the banks of the Colorado River, and the company were to take 3-5 thousand acre feet of water directly from the river for private use, there would be strong opposition from every state and community along the river. How is this any different from keeping 3-5 thousand acre feet from getting to the river?	The Griffith power plant would consume 212,920 acre feet maximum over its 40-year lifetime through the operation of this power plant from an aquifer which is conservatively predicted to have storage of 2.3 million acre feet above 1,200 feet below the land surface (ADWR 1994). Recharge is expected to be 0.16 million acre feet during that period. Therefore, this power plant will consume 8.7 percent of the Sacramento aquifer over the plant lifetime. The Colorado River below Davis Dam drains a watershed of 173,000 square miles, and during the 1997 Water Year, 9,931,000 acre-feet passed USGS gaging station 09423000. Planned maximum consumption from this power plant of 5,323 acre-feet per year is 0.05 percent of the discharge above Yucca, and within seasonal variability of water runoff from one year to the next. Also, see the water balance addendum in Chapter 2 of the Final EIS.
49.	It would appear to me that this project is in direct opposition to the stated policy of the United States, as often expressed by Vice President Gore. Our national goal is to reduce the amount of greenhouse gases and other pollutants being dumped into the atmosphere of the earth. Griffith will add yet another 119 tons of pollution to an already serious air quality problem. The company appears to dismiss this as nothing more than a minor local situation, yet we know that pollution generated in China is appearing in Seattle.	Your comment has been noted.
50.	In closing, I do not believe the environmental costs associated with this project are worth the short term employment benefits associated with its construction and operation. Advocates of the project would appear to consider only the short-term local benefits. I strongly urge you to consider the larger picture and deny the pending permit.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
Elaine E. Miller		Golden Valley, AZ

No.	Comment	Response
51.	I am against the Griffith Energy Project in its current projections. I do not agree with the proposal for our county to supply 5 Million Dollars in supporting infrastructure. That is Corporate Welfare. My research and experience show that the promises of job prosperity never come through and the community is left deeply in debt.	Your comment has been noted.
52.	These types of arrangements have caused damage and destruction to the environment and the natural resources all throughout the East and Midwest. The water is a major concern. I have lived in Golden Valley since 1982 and I know that the Sacramento Aquifer level has been dropping every year. The shape of our aquifer is also a concern. It is funnel-shaped which means that as more and more water is pumped out, the volume of available water reduces drastically with the lower water level. I believe that the project will use more water than anticipated. Our desert summer heat and dry conditions combined with the heat generated by the jet engines will no doubt result in higher consumption of water than stated in the plan. An "Industrial Hub" will seriously jeopardize the water supply for future "family" growth in greater Golden Valley. I have enclosed a copy of an article that ran in our newspaper recently. It clearly states the damage done by excessive pumping of ground water.	Water consumption in the Sacramento Valley aquifer has been impacted by domestic and industrial use. The Arizona Department of Water Resources (ADWR) reviewed water use in the basin in 1994 and looked at projected use over the next 40 years. At the time, existing and projected use was inadequate to establish an Active Management Area for the aquifer. The projected average consumption by the power plant is 3,064 acre feet per year, and is less than ADWR's total projected use of 3,240 acre-feet per year in 2040. The water balance for this plant has been engineered and has gone through extensive review. The projected average and maximum water consumption rates under multiple temperature scenarios has been the object of intense quality control and assurance.
53.	The emissions from the plant may be touted as "one of the cleanest around" but they still are above the EPA standards. The prevailing winds in our area will blow these emissions right through Golden Valley and into Kingman.	Section 4.3.2.1.2 of the Draft EIS shows that the project does not exceed the applicable air quality standards. Also, see Figure 3.2-1 for a graphic representation of the prevailing winds in the area.

No.	Comment	Response
54.	The sacrifices that we will have to face in our environment and lifestyle do not justify the establishment of the Griffith Energy Project. Judging from letter and articles I have read in our local papers there are a great many residents who share the same opinion. I support Carol Anderson and Joe Hart in their suspicions on the validity of such an expensive and marginally supposed necessary project. Bottom line, what we see happening is Profit taking precedence over environment. Private business wants to exploit our natural resources and to let this happen is short-sighted and irresponsible.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
Bruce Asbjorn	Bureau of Land Management	Kingman, AZ

55.	*Page S-9, Land Use and Recreation* - This table is supposed to summarize impacts. The statement "No significant recreation use of public or private lands," does not reflect an impact. It appears under both the Proposed Action and Alternatives columns. Perhaps it would be more appropriate to state that there is no significant impact to recreation uses. *Page 2-35, Land Use and Recreation* - See above comment for Page S-9.	Corrections to the Land Use and Recreation section of Section 2.5 Comparison of Alternatives (p. 2-35) and Environmental Consequences table in the Summary (p. S-9) are reflected in the **Final EIS Corrections Table.**
56.	*Page 2-35 and 36*, Visual Resources - I do not see any assessment of impact created by the installation of the gas pipeline.	A separate analysis for the pipeline has been prepared in response to Comment No. 64 and is included as an appendix. A summary of this assessment has been added to the table in Section 2.5 - Comparison of Alternatives. - of the appendix.
57.	*Page 3-46, paragraph 1* - The Term "off-road vehicle (ORV) is an outdated term, for BLM anyway. It is now referred to as "Off-Highway Vehicle (OHV)" use. Please do a global search in the document and make changes.	Corrections to Sections 3.8 Land Use, 3.9 Recreation, 4.8 Land Use and Recreation, and 4.18 Irreversible and Irretrievable Commitment of Resources are reflected in the **Final EIS Corrections Table.**
58.	*Page 3-51, paragraph 5* - I believe that Segment Z crosses more like 6 or 7 miles of the ACEC, and is adjacent to Mount Nutt Wilderness for only about 2 miles. Page 3-54, paragraph 2 - see comment above for page 3-51.	The correction to Section 3.8.2.6 is reflected in the **Final EIS Corrections Table.**

No.	Comment	Response
59.	*Page 3-54, Visual Resources* - I would like to see a map included in the document showing VRM classes.	A map showing VRM classes has been added in the Final EIS.
60.	*Page 3-58, paragraph 2* - The Black Mountain West scenic overlook was determined to be infeasible, so will not be built. It does not need to be mentioned in this section.	Your comment has been noted and the correction to Section 3.10.2.6 is reflected in the **Final EIS Corrections Table.**
61.	*Page 4-43, paragraph 6, and page 4-44, paragraph 4.* Please remove the word "significant" when describing recreation use of the land. I don't know how much recreation use is considered significant. Actually, a considerable amount of recreation use does occur, especially in the vicinity of Segments B and C. This use includes mountain biking and hiking, as well as hunting and OHV use.	Your comments have been 1) addressed in a modification to Section 4.8.2.2.1 of the Draft EIS (page 43, paragraph 6), and 2) reflected in a correction to Section 4.8.2.2.2 (page 4-44, paragraph 4, line 1) listed in the **Final EIS Corrections Table.**
62.	Visual Resources - 1. Please include the completed Visual Resources Contrast Rating worksheets as an appendix to the document. 2. Please include the Photo Simulations from KOPs 6 and 7 in the document. 3. There are two different things labeled "Figure 4.9-6"--one is the map showing the KOP locations, the other is a photo simulation of KOP 6. 4. Referring to Figure 4.9-1 (the map of KOP locations): -please add the locations of KOPs 6 and 7 to the map. 4. Referring to Figure 4.9-6 (the visual simulation for KOP 6): -the title at the lower right corner is incorrect. It should read "Photo Simulation from KOP 6". -the second sentence under the middle photo is difficult to understand. -the lattice towers in the lower left corner are disproportionate to the creosote bushes below them. Those bushes are probably only 6-8 feet high. 4. Referring to Figure 4.9-8: The lattice towers depicted in the lower photo appear to be too brightly shaded. I feel they should be toned down.	Modifications have been made as recommended. 1. The Visual Resources Contrast Rating worksheets have been completed and are included as an appendix to the Final EIS. 2. The Photo Simulations from KOPs 6 and 7 have been completed and are included in the Final EIS. 3. The map showing the KOP locations has been re-labeled Figure 4.9-9 and the locations of the new KOPs (6 and 7) have been added. The visual simulation from KOP 6 is Figure 4.9-6. The visual simulations from KOP 7 are Figures 4.9-7 (single shaft steel structures) and 4.9-8 (steel lattice structures). 4. The title at the lower right corner of the visual simulation for KOP 6 has been revised to read "Photo Simulation from KOP 6". The second sentence under the middle photo was revised to read "The corner pole is located east of the railroad out of the range of the photo." The lattice towers in the lower left corner were revised to appear more proportionate to the creosote bushes. The lattice towers would range from 80 to 120 feet in height, and so would be 10 to 20 times greater in height than the 6 - 8 foot bushes. The lattice towers depicted in the simulation for KOP 6 have been made less bright.

COMMENTER	ORGANIZATION	CITY/STATE
Rebecca Peck	Bureau of Land Management	Kingman, AZ

No.	Comment	Response
63.	Pg. S-7, Wildlife; The reference to voles should be removed. There are no voles in the project vicinity. Impacts to desert tortoise should be referenced here.	Corrections to Sections 2.5 Comparison of Alternatives table and Environmental Consequences table in the Summary are reflected the **Final EIS Corrections Table.**
64.	Pg. ii 3.1.2: Because the proposed pipeline will be new disturbance that occurs primarily on public land, the area where the proposed pipeline will traverse should be analyzed separately from the "Power Plant and Associated Facilities".	Separate sections for the portion of the east-west pipeline on BLM land have been prepared and are included as an Appendix to the Final EIS.
65.	Pg. 2-23 #8 Surface disturbance activities should also be limited to special-status species habitat as well.	The correction to Table 2.1-4 is reflected in the **Final EIS Corrections Table.**
66.	Pg 2-33, Wildlife; The reference to voles should be removed. There are no voles in the project vicinity. Impacts to desert tortoise should be referenced here.	See response to Comment 63.
67.	Pg. 3-23; Mohave mixed grass: "Tobosa" grass should be replaced with "Galleta" grass.	The correction to Table 3.5-1 is reflected in the **Final EIS Corrections Table.**
68.	Pg. 3-28; paragraph 5 I don't believe the "mesquite mouse" occurs in this area. This should be changed to *Peromyscus eremicus*, the cactus mouse. The spotted bat is also known from the Sonoran habitat type. Probably a more representative species for this area is the Merriam's kangaroo rat, *Dipodomys merriami.*	Corrections to Section 3.6 Wildlife on page 3-28 are reflected in the **Final EIS Corrections Table.**

No.	Comment	Response
69.	Pg. 3-29 Special Status Species The listed population of the Mohave desert tortoise is found north and west of the Colorado River. Tortoises east and south of the river are not listed by the Federal government and are called Sonoran desert tortoise.	Your comments are addressed by changes reflected in the **Final EIS Corrections Table.**
70.	Other species of special concern are: *Myotis velifer; Macrotus californicus; Eumops perotis; Idionycteris phyllotis; and Corynorhinus townsendii.*	The change is reflected in the **Final EIS Corrections Table.**
71.	Pg. 3-29; Mojave Desert Tortoise Although a population of "Mohave" tortoises has been identified east of the Colorado river, in Arizona in the Black Mountains, this population is not listed by the USFWS and has no designated critical habitat in the Black Mountains.	Corrections to Section 3.6 Wildlife based on your comments are presented in the **Final EIS Corrections Table.**
72.	Pg. 3-32 Gila Monster The Gila Monster does occur in the project area.	The correction to Section 3.6 Wildlife is reflected in the **Final EIS Corrections Table.**
73.	Pg. 3-32 Greater Western Mastiff Bat This bat is found in the project area in the Black Mountains. There is a known roost within 1/2 mile of the proposed route through the Black Mountains.	The correction to Section 3.6 Wildlife is addressed in the **Final EIS Corrections Table.**
74.	Pg. 3-32 Sonoran Desert Tortoise This species is also a BLM sensitive species.	The correction is reflected in the **Final EIS Corrections Table.**
75.	Pg. 3-33 Transmission Lines and Interconnections To make the document more user friendly I suggest you reference the maps for each segment you talk about. That way the reader doesn't have to search the maps.	Corrections to Section 3.6.2 are reflected in the **Final EIS Corrections Table.**

No.	Comment	Response
76.	Table 2.1-4 Although reseeding, and revegetation is handled for desert tortoise habitat in this table, what about all the other habitat areas? The mitigation section needs to reference a reclamation and salvage plan for all parts of the project found on public land. I found a reference to salvage on page 4-24 under the Proposed Action section. This is not adequate where the project crosses public land. A salvage and revegetation plan needs to be developed.	As part of the BLM Right-of-Way Grant application process, Griffith Energy will submit detailed plans for salvage and reclamation as part of their final Plans of Development for the Temporary Access Road and the Natural Gas Pipeline. Both linear facilities will cross BLM-administered public lands. Similar plans for salvage and reclamation of public lands affected by new transmission line construction will be developed by Western in cooperation with the BLM as needed. Western is committed to salvage and reclamation of disturbed areas as stated in Table 2.1-4.
77.	Chapter 4 - Environmental consequences pg. 4-27 Wildlife The last issue should be expanded to include not only threatened and endangered species but "loss of habitat for threatened and endangered species and other special status species."	The correction to wildlife issues has been addressed in the **Final EIS Corrections Table.**
78.	Pg 4-28, para. 5 The BLM also considers the Sonoran desert tortoise a sensitive species.	The correction to Section 4.6.2.1 is reflected in the Final EIS Corrections Table and the Appendix addressing the eastern gas pipeline.
79.	Pg 4-28, para. 6 Along the area where the new pipeline is proposed, as one approaches the foothills of the Hualapai Mountains, the habitat is not marginal, and the potential for encountering the Sonoran desert tortoise and the Gila monster is high.	Page 4-28 paragraph 5 has been modified to reflect information presented in the comment. See modification in Chapter 2 of the Final EIS.
80.	Pg. 4-29, para. 8 Remove the word "voles".	The correction is reflected in the **Final EIS Corrections Table.**
81.	Pg. 4-30, para. 3 Concerning long-term and short-term habitat loss: Even in the absence of blading, the BLM considers habitat loss to be long term if an area is used repeatedly by vehicles so that the vegetation is altered and a "way is formed" from this repeated use.	Page 4-30 has been modified to reflect information presented in the comment. See the modifications for Section 4.6.2.2.1 in Chapter 2 of the Final EIS.

No.	Comment	Response
82.	Pg. 4-30, para 4 A discussion concerning impacts to the Gila monster and rosy boa belong in this section. Impacts to these two species will be similar to those described for other wildlife species. Mitigation for desert tortoise will also benefit these two species.	Page 4-30 has been modified to reflect information presented in the comment. See the modifications for Section 4.6.2.2.1 in Chapter 2 of the Final EIS.
83.	Pg. 4-31, para. 1 and 3 Please detail in these paragraphs how much of the total acres of disturbance total acres reclaimed, and total acres lost to long-term disturbance would be on public land.	Page 4-31 has been modified to reflect information presented in the comment. See the modifications for Section 4.6.2.2.1 in Chapter 2 of the Final EIS.
84.	pg. 4-31, para. 7 Desert tortoise also occur in this section of the project.	The correction has been addressed in the Final EIS Corrections Table.

COMMENTER	ORGANIZATION	CITY/STATE
Paul Hobbs	Bureau of Land Management	Kingman, AZ

85.	There is no soils map identifying what the soils are in the project area in the list of figures for cross referencing and supporting soils statements in DEIS. Provide a useable one in the text.	Soils maps have been prepared for both the power plant site and associated facilities as well as the transmission line routes. These appear as **Figures 3.4-1, 3.4-2, and 3.4-3.**
86.	In section 3.4.1, the citation for soils mapped by NRCS 1998. Is this information derived from the Interim Report 1996, or is this a separate and more recent site specific mapping project done in 1998 for this Griffith Energy Project?	There has been no site specific soils mapping for the Griffith Project. The "NRCS 1998" reference refers to unpublished soils mapping provided by the Natural Resources Conservation Service field office in Kingman in 1998.
87.	Section 3.4.2, Proceed with reseeding-revegetation efforts on the soils in all segments where practical. The use of the repetitive phrase "Revegetation of these soils is difficult because of excessive coarse fragments within the profile" is used, potentially justifying no reclamation. Reclamation efforts on the part of the proponent will occur.	Corrections to Sections 3.4.2.2, 3.4.2.3, and 3.4.2.6 are reflected in the **Final EIS Corrections Table**.

COMMENTER	ORGANIZATION	CITY/STATE
Don Simmonis	Bureau of Land Management	Kingman, AZ

No.	Comment	Response
88.	Chapter 3, 3.7, p.3-38 should include a brief discussion of the Hardyville Toll road and state that it has only been recorded on the west side of the Black Mountains as discussed in Segment Z. The historic route definitely went east of Kingman and the proposed project crosses it in this area.	Information on the Hardyville Toll Road has been added. See the addendum for Section 3.7 in Chapter 2 of the Final EIS.
89.	Chapter 3, 3.7.2.3, p. 3-41 (Segment C) should contain a brief mention of the Hardyville Toll road which parallels I-40 and that it probably has been destroyed where the proposed project crosses it.	There is no known record for any portion of the Hardyville Toll Road along the heavily disturbed I-40 corridor or the Kingman area generally. It may be correct in believing that the toll road "probably has been destroyed" in the area of the proposed Segment C crossing. Nevertheless, the focused pre-field survey research that was mentioned in response to Comment No. 88 will include the vicinity referenced here.
90.	There have been many archaeological surveys and reports of gas lines, power lines, roads, etc., that have not even mentioned the Hardyville or Hardyville-Prescott Toll road that went through the area. Even if it is mostly gone, it is important to include it in the text for future projects in the area to be aware of. It is also important for historical reasons.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
Duane J. Aubuchon	Arizona Game and Fish Department	Kingman, AZ

No.	Comment	Response
91.	WATER RESOURCES - Surface Water Quality (pages S-6, 2-32) This section states that the brine disposal pond would exceed surface water standards for chronic and acute exposure to arsenic, barium, cadmium, chromium, copper, mercury, selenium, silver and zinc. The summary also states that over the life of the project, this may result in potential mortality to waterfowl and other birds landing on or using the pond (page 5-8, 2-34 and 4-28). On page 4-10, the DEIS claims that concentration of these chemicals would exceed aquatic and wildlife effluent dependent surface water standards for chronic and acute exposure. Another DEIS paragraph contradicts these statements (page 4-28) declaring that no impacts are anticipated since the water would be of no higher TDS than seawater. This paragraph also describes anticipated waterfowl visitations to the pond to be infrequent and irregular because the Plant is outside the main Colorado River basin which contains the nearest flyway. This information is incorrect, as the Department has noted high waterfowl visitation rates at other toxic ponds over 20 miles from the Colorado River. At one location, the Copperstone Mine outside of Parker, Arizona, the Department documented hundreds of waterfowl mortalities associated with a cyanide leaching operation. The Copperstone Mine prevented further mortalities by placing polyurathane mesh netting over the cyanide ponds to prevent waterfowl access. The Department recommends monitoring waterfowl use of the brine disposal pond and implementing a similar system if the proponent observes waterfowl use and/or mortalities. The owners of the Griffith Power Plant will be responsible for any waterfowl or other wildlife mortalities caused by the brine disposal pond and may face possible criminal and civil sanctions as a result of wildlife losses.	See Response to Comment No. 4.

No.	Comment	Response
92.	PURPOSE AND NEED (page 1-2) This section does not present a purpose or need for the construction of a new power plant in the Kingman area. Is there currently a power shortage or a projected increase in demand? Perhaps elements of the Northwestern Arizona Transmission Study described on page 3-66 should be included within this section.	Additional information has been provided to relate the project's purpose and need to Western's mission and open access transmission tariff. See the Addenda section in Chapter 2, of the Final EIS.
93.	Table 2.1-3 and WILDLIFE (pages 2-12 and 4-27 to 4-32) The permanent loss of wildlife habitat due to construction of the Griffith Power Plant (65 acres) and associated roads (59 acres), transmission line structures (1 acre), and substation (10 acres) totals approximately 135 acres. It is Department policy (I2.2) to seek compensation at the 100% level, where feasible, for potential or actual habitat losses resulting from land or water projects. The Department classifies the habitats where the Griffith project occurs as resource category III, or lands with a high to medium value for Arizona's wildlife. The Department's goal for projects occurring on these lands is no net loss of habitat value. We recommend considering general habitat replacement values for the Griffith project concurrent with the development of a compensation plan/formula required for the loss of designated BLM tortoise habitat (paragraph 3, page 4-29).	Long-term habitat losses within areas of BLM designated desert tortoise habitat would be compensated for as a result of the Desert Tortoise Compensation Plan.
94.	The third paragraph on page 3-28 describes several antelope populations that occur near the proposed project site. Many of these are incorrect. Antelope occur in the Hualapai Valley area and in the Hackberry Wash area east of the Peacock Mountains, but the Goodwin Mesa and Truxton herds are several miles away from the project location. Round Valley is not an area the Department is familiar with in the project vicinity. Additionally, antelope were seen in the Dutch Flat area nearly 20 years ago, but this was an incidental sighting and they have not been seen there since that time.	Page 3-28 has been modified to reflect information presented in the comment. See the modification for Section 3.6 in Chapter 2 of the Final EIS.

No.	Comment	Response
95.	The fifth and sixth paragraphs list species whose range does not occur close to the project area. The antelope jackrabbit (*Lepus alleni*), mesquite mouse (*Peromyscus merriami*), and Harris hawk (*Parabuteo unicinctus*) are all species which occur in southeastern Arizona, but do not occur in the Kingman area.	Page 3-28 and 3-29 has been corrected to reflect information presented in the comment. See the Final EIS Corrections Table.
96.	4.5.2 PROPOSED ACTION (page 4-25) The Department recommends including a map with this section that displays all the proposed project roads, and differentiates the roads that will remain open after the project is complete from those that the Western Area Power Administration plans to close and reseed.	The scale of the maps used for the Draft EIS are not sufficient to display the proposed access roads. Existing roads and trails would be used for the transmission line upgrade of the Davis-Prescott and the Griffith-Peacock transmission line, where it parallels the existing transmission line. Western does not anticipate that any roads used for construction of the upgrade or the Griffith-Peacock line would be closed since they will be needed for the maintenance of the transmission lines. Western will consult with the Arizona Game and Fish once the transmission lines are constructed to determine if there should be any road closures for wildlife enhancement purposes.
97.	4.16 CUMULATIVE IMPACTS (page 4-90, 4-91) The Department recommends improving the analysis within this section by including a more in-depth evaluation of reasonably foreseeable future actions. For example, the DEIS estimates the use of natural gas by the Griffith Power Plant at 22.1-41.5 billion cubic feet per year. This would amount to a consumption rate of .058-.108 percent/year of the Texas reserves and .013-.025 percent/year of the proved U.S. natural gas reserves (page 4-1). There is no discussion of how this rate of natural gas consumption will impact these reserves over the life of the project (50 years) or how similar power plants (e.g. South Point Power Plant) in conjunction with the Griffith Power Plant will affect the sustainability of these reserves.	See the addendum for Section 4.16 in Chapter 2 of the Final EIS. Even though the proposed project life is 40 years, 50 years of operations has been discussed in direct response to the comment.

No.	Comment	Response
98.	This section also states that over the life of the project water demands for industrial use in the Sacramento Valley aquifer is expected to triple, and municipal use of the aquifer would double. An ADWR report (1994) developed these estimates and claimed the water supply was adequate to sustain that volume of consumption for 100 years. The DEIS does not indicate if the ADWR report (1994) evaluated the impacts of water withdrawals from development of the proposed I-40 Industrial Corridor and Dutch Flat residential community. The Department recommends evaluating/modeling the effects these future developments will have on aquifer supplies and water table levels. The Department also recommends including a discussion on the effects projected groundwater use will have on natural spring flows within the watershed, since many wildlife populations are dependant on these water sources for their survival.	Although general statements project future growth in the Sacramento Valley, the proposed I-40 Industrial Corridor and the Dutch Flat residential community, there are no specific statements of commercial or industrial activity, nor of the population density expected. Without this type of information, any modeling to determine the projected water demand and the effect on the aquifer would not be valid. Regarding the springs, see the Addendum for Section 4.2.2.1.1 in Chapter 2 of the Final EIS.
99.	Similarly, the DEIS assesses the Griffith Power Plant's projected impact on air pollution standards and regional haze in the Grand Canyon airshed, but it does not analyze the reasonably foreseeable cumulative impacts from other heavy industry sources proposed for the I-40 Industrial Corridor. The Department recommends evaluating the cumulative impacts of the projected development of heavy industry within the I-40 Industrial Corridor on meeting State air quality standards and visual range requirements for the Grand Canyon airshed.	The Council on Environmental Quality guidelines for analyzing cumulative impacts require that "past, present, and reasonably foreseeable actions" be considered. The Draft EIS did address other air quality emissions (past, present and future) in the area. Past and present emission sources were included in the baseline conditions incorporated in the air quality model developed for this project as described in Section 4.16 of the Draft EIS and were used as the existing conditions against which the impacts of the project were assessed as required by EPA and ADEQ regulations. The cumulative effect of adding other sources of emissions in the future as a result of future development of the I-40 Industrial Corridor and other uses is discussed in Section 4.16 of the Draft EIS. While some potential additional projects in the area are currently being discussed, plans for them have not been finalized (i.e. plans or permit applications have not been filed). Therefore, the likelihood for them to proceed and the quantification of their potential effects are not reasonable to assess beyond the level described in the Draft EIS. Also, see response to Comment No. 139.

No.	Comment	Response
100.	4.18 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES (page 4-94) The DEIS should include the use of natural gas under this heading.	A change to Table 4.18-1 has been made. See the Final EIS Corrections Table.
101.	PROPOSED ACTION AND ALTERNATIVES (page S-2) The numerical order in the second paragraph skips from 3) to 6).	The summary has been revised.
102.	GEOLOGIC HAZARDS (page 3-2) The second paragraph under this heading implies that earthquakes with a magnitude of 9.9 have occurred within the project area. The paragraph should clarify that 3.5 to 9.9, and 4.5 to 9.9, are only a range of conditions. Another option would be to lower the top of this range to a magnitude of 6.1, the largest earthquake on record for the area.	The text in the Draft EIS did not intend to imply that an earthquake of magnitude 9.9 has occurred in the region. It was intended to refer to earthquakes within the range of magnitude 3.5 to 9.9 which occurred between 1973 and 1998 and earthquakes within the range of magnitude 4.5 to 9.9 which occurred prior to 1973. These were the ranges of magnitudes reported by the earthquake database searches. A 6.1 magnitude earthquake has been the largest recorded event within a 200 km radius of the power plant site. The text has been modified as noted in the Final EIS Corrections Table.
103.	3.32 AIR QUALITY (page 3-18) The first paragraph has an unnecessary end parenthesis mark after the word "typically."	The correction is reflected in the **Final EIS Corrections Table.**
104.	The next paragraph lists only the second highest 24-hour average measure for inhalable particulate matter less than 10 microns in diameter. The DEIS should also include the highest 24-hour average measurement; otherwise, it appears as though this information is purposefully withheld.	The highest 24-hour concentration of PM_{10} was 64.7 $\mu g/m^3$. The second-highest value of 48 $\mu g/m^3$ was reported in the Draft EIS because this is the value commonly used by agencies to depict the true background because one exceedance of the highest level is allowed. The EIS has been updated to reflect the comment. See Final EIS Corrections Table.
105.	3.8 LAND USE Page 3-47 and 3-48 claim the formal designation of the I-40 Industrial Corridor will be decided in a hearing held by the County in late 1998. On page 3-49, the hearing date has changed to October 1999. Page 3-50 lists the hearing date as October 1998. These sentences should be corrected and present consistent information.	On December 21, 1998, the County Board of Supervisors approved rezoning of all or portions of Township 20N., Range 17W., in Sections 19, 30, 31, Township 19N., Range 17W., in Sections 6 and 7 and Township 19 N., Range 18W. in Sections 10, 15 and 16 from A-R/36A (Agricultural-Residential/36 Acre Minimum Lot Size) to M-X (Heavy Manufacturing). This was accomplished by approval of Resolution 98-414. Township 19N., Range 18W., in Sections 12, 13 and the northern half of 14 were previously zoned M-X. The boundary of the entire proposed industrial corridor in Mohave County is shown on Figure 3.8-2c at the end of Chapter 2 of the Final EIS.

No.	Comment	Response
106.	3.9.2.5 SEGMENT E (page 3-53) Separate the word "is limited" in the fourth sentence.	The correction is reflected in the **Final EIS Corrections Table.**
107.	3.11 SOCIOECONOMICS (page 3-61) Change the city name of "Los Vegas" to "Las Vegas" in the fourth paragraph.	The correction is reflected in the **Final EIS Corrections Table.**
108.	4.2.2.1.1 GROUNDWATER QUALITY (page 4-8) The first sentence of the last paragraph on this page should include the word "by" in the sentence, "....affected by potential spills..."	The correction is reflected in the **Final EIS Corrections Table.**
109.	4.6.3.2 ALTERNATIVE PIPELINE (page 4-32) The title of this section should be, "Alternative Transmission Line."	The correction is reflected in the **Final EIS Corrections Table.**

COMMENTER	ORGANIZATION	CITY/STATE
Michael Kondelis	Mohave County Public Land Use Committee	Kingman, AZ

110.	Under the first proposal, the plant area and power lines would have had very little visibility from Interstate 40 and the expanding Mohave County Industrial Corridor. The power lines ran north from the power plant, connecting into the existing Davis-Prescott 230-kV transmission line. NONE of the lines crossed Interstate 40. The present project as presented in the DEIS by Western Area Power Administration (WAPA), the Lead Agency, has extensive changes to the power lines. The additional miles of power lines is one negative environmental factor, but not the main factor we find questionable.	The original proposal included one crossing of I-40 by a new 230-kV transmission line. Western's current preferred alternative includes two adjacent and parallel crossings of I-40 in Segment A as shown on Figure 1.1-1. The rights-of-way for the preferred alternative across I-40 utilizes the previously approved and permitted transmission right-of-way acquired by Citizens Utilities.

No.	Comment	Response
111.	The two 230-kV transmission lines proposed by WAPA would cross Interstate 40; Segment B continuing northeast and connecting to the Mead-Liberty transmission lines and Segment D, turning north and paralleling Interstate 40 for over three miles before connecting to the McConnico Substation. The visual effects of these power lines obscures the mountains and natural beauty of our area to tourist and potential companies that may move or expand their facilities to our Industrial Corridor. We feel a less visible route for Segment D would be in the best interest of Mohave County.	Western conducted additional visual analysis, including the development of a new simulations. The simulations demonstrate that the new transmission line would be visible from Interstate-40 (I-40). Western explored other alternative routes for proposed Segment D that parallels I-40. Western did not identify any routes that were feasible from an engineering perspective. Western believes the visual impacts are not significant for Segment D due to the industrial\manufacturing zoning near the proposed route and low visual resource management classification. See the addendum in Chapter 2 of the Final EIS that has been added for routing alternatives to Segment D to supplement the discussion in Section 2.2.2.3.1 of the Draft EIS, **Transmission Alternatives Considered but Eliminated from Detailed Analysis**. Also, visual simulations of what Segment D would look like from I-40 and corresponding discussion has been developed. An addendum for Section 4.9.2.2.2, Griffith-McConnico 230-kV Line (Segment A and D) discussing the simulations and the visual impacts of Segment D has been incorporated into Chapter 2 of the Final EIS.

No.	Comment	Response
112.	Based on current information the groundwater available in the Sacramento Groundwater Basin is 2.3 million acre feet to a depth of 1200 feet below the ground surface, with a total of 7 million acre feet stored within the basin. Demand for the Golden Valley area was 1258 acre feet in 1990. Demand for The southern part of the basin, where the Griffith Energy Project is proposed, is unknown. A 100-year usage supply, drawing the water down to the 1200 foot level, would allow 20,000 acre feet to be withdrawn from the entire basin per year. (Staff Report, Arizona Department of Water Resources, 3/24/94). Assuming the demand for the southern part of the basin is at least equal to the Golden Valley area and allowing for increased use since 1990, it would be reasonable to assume the current demand for the entire basin is around 4,000 acre feet per year. The Griffith Project proposed annual withdrawal of 3,064 to 5,323 acre feet. (Page 2-31 Draft EIS) Although the EIS contends this would have a minimal impact on the total volume of water in the aquifer, it will, effectively, double the current use. Although this use is still well below the 20,000 acre feet per year available for the next 100 years, a cause for concern comes to mind when the use is compared to the amount of recharge back into the aquifer. The estimated annual recharge for the entire basin is 2,000 acre feet per year. (Page 22, Hualapai Mountain Land Exchange EIS) If the Griffith project goes in, we will then be taking out approximately 8,000 acre feet per year and putting back 2,000 acre feet.	Development generates benefits but also has some costs. As you noted, the ADWR has suggested that the Sacramento Valley aquifer can sustain 23,000 acre-feet per year consumption for 100 years, based on Gillespie's calculations of recharge of 4,000 acre-feet per year. Additional estimates of the recharge suggest recharge is 4,637 acre-feet per year in this portion of the Basin. Existing demand of 1,222 acre feet per year plus projected average power plant consumption of 3,064 acre-feet per year is close to the average annual recharge, but nevertheless would result in drawdown of the aquifer over the next 40 years. Maximum power plant consumption, 5,323 acre-feet per year, and ADWR projections of use of 2,234 acre-feet per year in 2040 is approximately half of ADWR's projection of sustainable consumption of 16,000 acre-feet per year for 100 years.

COMMENTER	ORGANIZATION	CITY/STATE
Deanna M. Wieman	United States Environmental Protection Agency, Region IX	San Francisco, CA

No.	Comment	Response
113.	We have rated this DEIS EO-2 -- Environmental Objections-Insufficient Information. (See the enclosed "Summary of Rating Definitions and Follow-up Action"). The document has been rated according to guidance in our Policy and Procedures Manual for Review of Federal Actions Impacting the Environment (EPA Manual 1640). The basis of the "EO" portion of our rating reflects the potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives-- in situations where there is no applicable standard or where applicable standards would not be violated. The "2" portion of our rating is based on the need for additional information and clarification in the EIS on the Purpose and Need statement and alternatives analysis, permitting, water-related impacts, and cumulative impacts.	Your comment has been noted.
114.	According to our manual, the basis for an objection can also be made where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts. With the onset of deregulation in the electric services industry, EPA expects the construction of additional non-utility-owned "merchant plants" in the near future. Our expectations are that Federal agencies, such as Western, involved with the environmental review of actions related to these proposed plants, will fully embrace the intent of Section 101 of the National Environmental Policy Act (NEPA), which requires agencies to use all practicable means to administer Federal programs in the most environmentally sound fashion and to ensure that the agency has fully considered the environmental consequences of its actions.	Your comment has been noted.

No.	Comment	Response
115.	Western states in the DEIS that the Griffith Power Plant has been approved by the Arizona Corporation Commission's Power Plant and Transmission Line Siting Committee through a formal application approval process. EPA is very concerned that this previous approval may be unnecessarily influencing Western's NEPA process and is therefore not consistent with NEPA where an EIS "...shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made" (40 CFR 1502.2(g)). Western has limited its Preferred Alternative to the transmission line portion of the Project. It is EPA's view that Western's approval of their Preferred Alternative would not occur without the proposed power plant. Therefore, the underlying purpose, in the context of environmental protection, to which Western is responding to, is generation and delivery of electrical power. In our attached detailed comments we include further discussion and recommendations regarding Purpose and Need, and alternatives analyses, and encourage Western to include additional alternatives in the Final Environmental Impact Statement (FEIS). EPA's concerns over potential impacts to water resources and quality drive our alternatives analyses recommendations.	Based on discussions with EPA, Western has amplified its purpose related to its business practices and mission. See the Addenda in Chapter 2 of the Final EIS.
116.	We appreciate the opportunity to review this DEIS. EPA intends to work with you, and would like to also work with the Department of Energy (DOE) to resolve our objections, ensure incorporation of additional information into the DEIS, and clarify issues. We will contact you to set up a meeting to implement the resolution process to our objections. Two copies of the Final EIS should be sent to this office, attention David Farrel, at the letterhead address (mail code CMD-2) when it is officially filed with our Washington, D.C., office. For any questions, please contact Karl Kanbergs, of my staff, at (415) 744-1483, or David Farrel (Federal Activities Office Chief) at (415) 744-1584.	Western representatives met with EPA on January 6, 1999. The results of the meeting are summarized in an EPA letter included in the Appendix of the Final EIS.

No.	Comment	Response
117.	*Purpose and Need*. Western defines "need" as a need to respond to Griffith's request for interconnections to Western's power grid. The described "purpose" includes several components that include provision of sufficient transmission service and capacity to support the Project, to meet the intent of Federal Energy Regulatory Commission (FERC) requirements, to ensure that transmission reliability and voltage support criteria are maintained or improved, and to minimize adverse environmental effects. EPA disagrees with Western's narrow definition of its Purpose and Need statement. The Council on Environmental Qualities Regulation (CEQ) at 40 CFR 1502.13 (Purpose and Need) states that "the statement shall briefly specify the underlying (emphasis added) purpose and need to which the agency is responding in proposing the alternatives including the proposed action." Our interpretation of the purpose of the proposed action is to generate electrical power due to a consumer demand. In our EIS scoping comment letter of May 21, 1998 to your Agency, we stated: "The Purpose and Need section should clearly describe the purpose of the project and how the purpose will be achieved by implementing the project. This section should set out the need for additional power supplies, the need for the connection into Western's grid, and the need for the proposed method of transmission and routing. The Draft Environmental Impact Statement (DEIS), should provide background information, including reference to previous EISs and other environmental documents (concept of tiering, see 40 CFR 1500.4(i), and 1502.20) and the relationship of the proposed project to other power generation facilities, such as Glen Canyon Dam."	Based on discussions with EPA, Western has amplified its purpose related to its business practices and mission. See the Addenda in Chapter 2 of the Final EIS.

No.	Comment	Response
117. (cont)	Western should redefine or augment its need statement to include the above information. In the Final Environmental Impact Statement (FEIS) we ask that Western discuss the issues presented above, and provide decision makers and the public with the necessary background information to determine the true need for the additional power generation-- both in the context of Western's transmission grid requirements and the documented or projected market demand. A thorough discussion of these issues would also facilitate discussion of potential project impacts on growth. A revision of the Purpose and Need statement in the FEIS would also facilitate a better alternatives analysis.	

No.	Comment	Response
118.	2. *Alternatives Analysis*. Our focus on recommending additional alternatives analysis is to assure that maximum consideration has been given to minimizing use of water resources and minimizing production of potentially toxic byproducts from that water use. Please refer to the Water Issues and Biologic Resources section of our comment letter regarding our water-related environmental concerns. Our recommended analysis focuses on the potential for presentation of an alternative power plant design, or modification of the current design, in the FEIS. Regardless of whether the project has already been approved by another non-federal agency, one of the primary purposes of an EIS is to "...inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." (40 CFR 1502.1). In our scoping comment letter under alternatives analysis we stated: "The DEIS should rigorously explore and objectively evaluate all reasonable alternatives, including reasonable alternatives not within the jurisdiction of your agency, pursuant to 40 CFR 1502.14. Reasonable alternatives could include, but are not necessarily limited to, alternative power plant sites, reduced project size, and alternative technologies, including solar power plants and wind farms. Alternatives for the proposed action (with the exception of the No Action Alternative) should correspond to the basic project Purpose and Need." An agency should include reasonable alternatives not within the jurisdiction of the lead agency, as supported by CEQ regulations (40 CFR 1502.14(c)), and question 2a of NEPA's Forty Most Asked	Several alternatives that would reduce water consumption, including dry cooling, were considered for the Griffith Energy Project. Additional information on these alternatives has been included in the discussion of the alternatives for the power plant that were considered but dismissed.

No.	Comment	Response
118. (cont)	Questions. The answer for question 2a states that in "determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative." EPA has recently completed its review of the DEIS for Western's Sutter Power Project, Sutter County California (Western Area Power Administration, October 1998). The proposed action is a 500 megawatt natural gas-fired combined cycle, electric generation facility. Through working with various agencies, including EPA, the project proponent changed the design of the powerplant, from one with conventional water cooling towers, to a design incorporating 100% dry cooling. By this design change, original projected groundwater consumption of 3,000 gallons per minute would be reduced to 140 gallons per minute, thereby achieving 95% reduction of groundwater use. Additional benefits of reduced water use would include elimination of contaminated cooling tower "blowdown" water, and elimination of particulates (PM10) from cooling tower emissions. In the FEIS for the Griffith Project, Western should examine the dry cooling system alternative, and should include this alternative if it can be shown to be reasonable from the technical or economic viewpoint.	See previous page.

No.	Comment	Response
118a.	While we agree that the current project site appears to be a reasonable choice from a site logistics perspective, we also recommend that Western, in the FEIS, amplify the discussion of why other potentially more environmentally preferable sites were not analyzed by Western. This should be done in the context of Western's revised Purpose and Need statement. Alternative sites should not be dismissed just because the current proposed site has been approved by a state agency, or has good economic siting logistics (DEIS pg. 2-27); moreover, an EIS should effectively screen for sites with the potential for the last adverse environmental effects utilizing the alternatives analysis process.	Given that the purpose of the proposed Griffith Energy Project is to provide wholesale power to the regional electrical markets, it could be located anywhere in the region and several sites were evaluated. However, Griffith Energy determined that siting the project near Kingman and building the necessary transmission interconnections to export the generated power would provide a secondary benefit to Mohave County of increasing the reliability of the local electrical system. This is discussed in section 4.10.2.2 of the Draft EIS. Therefore, no sites outside the vicinity of Kingman were considered. The next step was to find a site in this area that met three primary criteria: 1) compatible zoning and nearby land uses, 2) sufficient distance from the Grand Canyon to minimize any potential regional haze impacts, and 3) proximity to gas, transmission, highway, rail, and water as discussed on page 2-27 of the Draft EIS. The industrial areas in the vicinity were evaluated and the I-40 Industrial Corridor was selected because it the industrial area farthest from the Grand Canyon. Within this area, sites that best met criteria 3 above were evaluated and, in conjunction with the County, the proposed site was selected. These criteria, in addition to being the most economical also best minimize the impacts associated with the project's needed infrastructure. All of this information was considered in the siting decision made by the State and their issuance of a Certificate of Environmental Compatibility which is referenced in the Draft EIS. Also, this information is discussed in other sections of the Draft EIS though not in a siting context. Other sites were not evaluated in the EIS because the environmental screening and the minimization of adverse effects for sites was already conducted by the referenced State siting process, the siting of the facility is outside the purview of the Federal action necessitating the EIS, and the proponent does not own or control other sites.

No.	Comment	Response
119.	*Integration of NEPA Requirements With Other Planning and Environmental Review Procedures*. The DEIS states that procedures of formal consultation with the U.S. Fish and Wildlife Service (USFWS) and the State Historic Preservation Officer (SHPO) have been initiated. We note that in various sections of the DEIS, it states that additional surveys will be done prior to construction of the proposed facilities. Western should ensure that all appropriate surveys (archeological, cultural, traditional cultural, and biologic) are completed prior to issuing a Record of Decision (ROD), and should present any planned additional surveys, if possible, in the FEIS. The integration of the requirements of NEPA with other planning and environmental review procedures required by law is mentioned in the CEQ regulations no less than three times (40 CFR 1500.2(c)--Policy, 40 CFR 1501.7(a)(6)--Scoping, and 40 CFR 1502.25(a)--Environmental Review and Consultation Requirements). Additional comments relating to our recommendation to completing surveys and consultations are mentioned under Cultural Resources and Biologic Resources headings of our comment letter.	Western has discussed this comment with EPA. Western's go/no-go decision and selection of preferred alternative are included in its records of decision. Upon a decision, Western's practice has been to initiate any required intensive biological and cultural resource surveys upon completion of preliminary design work and in conjunction with land surveys for a project. The results of both cultural resource and biological surveys are used during the design phase of project to facilitate transmission structure, substation, and access road siting. The National Historic Preservation Act and the Endangered Species Act require Western to limit ground disturbing actions until appropriate concurrences are received from the State Historic Preservation Officer and the U.S. Fish and Wildlife Service, respectively. In the case of Griffith, Western will not authorize any ground disturbing activities until the completion of cultural resource consultations and biological surveys stipulated by the U.S. Fish and Wildlife Service. Since the issuance of the Draft EIS, Western has received conditional concurrence to its determination that the proposed Griffith Energy Project will not adversely affect any endangered, threatened, or candidate species, provided preconstruction surveys are conducted and construction activities are curtailed around any discovered peregrine falcon nesting sites. This concurrence completes the endangered species consultation process. In addition, an intensive cultural resource survey of the proposed Peacock Substation site and vicinity has been completed. No cultural or historic resources were discovered and Western has determined that the construction of the substation will not have an effect on any properties eligible to National Register of Historic Properties. Cultural resource surveys for the other components of the project would begin once a go/no-go decision is made and the applicant provides funding for the survey work. If Western discovers any properties eligible to the National Register of Historic Properties, Western would mitigate the impacts to these properties in consultation with the State Historic Preservation Officer.

No.	Comment	Response
119. (cont)		(cont.) Western recognizes that the project has a potential to effect traditional cultural resource properties of the Hualapai and Navajo tribes, and will consider any effects in its decision making process. The Hualapai traditional cultural resource survey has been completed and the results have been summarized in the Final EIS. The Navajo tradition cultural resource survey is scheduled for completion by April 1999. Western will take into account the results of the TCP surveys in its Record of Decision and cultural resource consultation process with the State Historic Preservation Officer.
120.	*EIS Index*. The FEIS should include a subject index per requirements of 40 CFR 1502.10(j).	A subject index has been developed and included in the Addenda section of the Final EIS.
121.	*Cumulative Impacts*. Western acknowledges that the project may indirectly induce growth. EPA recommends that in the FEIS, Western expand its analysis of the potential project-induced growth to include growth impacts outside of the Kingman Area, and the growth implications of generating enough power to potentially service about 500,000 homes. We note that the Proposed Action would be capable of transporting power to both the Las Vegas metropolitan area and the Phoenix metropolitan area. The implications of electrical power generation at Griffith to growth issues related to these metropolitan areas should be discussed in the FEIS. The CEQ guidelines recommend varying the geographic scope of the analysis commensurate with the resource being analyzed. For additional clarification ad reference on Cumulative Impact analysis we refer you to the CEQ publication *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ, January 1997). The complete document may be down loaded from the following URL address: http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm. According to the CEQ, the principles of cumulative impacts analyses are: inclusion of past, present and future actions, inclusion of Federal, nonfederal, and private actions, focus on each affected resource, ecosystem, and human community, and focus on truly meaningful effects.	Historically, utilities in the west and the Western Systems Coordinating Council (WSCC) have worked together to address electricity demand growth rates to maintain regional system reliability. Independent power producers have participated in studies and activities addressing system reliability. In the Arizona-New Mexico Power Area, the average summer compound growth rate is projected to be 2.2 percent for 1996 to 2006 with adverse hydro conditions. During this 10-year period within the Arizona-New Mexico Power Area, annual energy loads will increase from 79,247 MW in 1996 to 97,379 in 2006. With the changing utility environment from a regulated industry to a market-driven industry, less generation will be developed in response to load growth demands and more will be developed in response to market conditions. In either scenario, WSCC will monitor planned generation additions to ensure reserve generation capacity is available to meet peak demands. The peak demand reserve margin in the WSCC region will remain about the same within a deregulated environment. The Griffith Energy Project is being developed in response to deregulation in California. It is not being developed in response specific load growth demand, but rather by opportunities to compete in a deregulated electrical markets. There is no correlation between load growth projections and the development of the Griffith Energy Project. The Griffith Energy Project has ample opportunity to offset more expensive, less efficient generation.

No.	Comment	Response
122.	Western describes an industrial zoned corridor adjacent to the proposed powerplant. In the FEIS the aerial extent and location of the industrial corridor should be shown on a map. Additional information should also be provided on the magnitude and type of activity planned in the future. We also ask that Western explain, under cumulative impacts, the significance of the "future" 230/69-kV transformer and gas compressor area, mentioned on Figure 2.1-1.	The I-40 Industrial Corridor is not adjacent to the proposed power plant. The proposed plant is located within the industrial corridor. The boundary of the industrial corridor is shown on Figure 3.8-2c that has been included in the Final EIS. Seven sections within proposed industrial corridor around the Griffith site have been zoned for industrial development. Other than the County zoning the land for industrial development, there are no current plans for the magnitude and type of activity that could occur there. On Figure 2.1-1, the future gas compressor referenced is space reserved for the addition of a gas compressor for the Griffith Plant should it ever become necessary to boost the pressure of the gas provided by the gas suppliers. Currently, pressures would be adequate for the project but the contingency was added to address the potential for future changes in pressure. The future 230/69-kV transformer was included in the plan because Griffith Energy has agreed to provide a 69-kV tap for the existing Citizens Utilities 69-kV line that runs north-south through the Sacramento Valley. Citizens has indicated that they will not build their approved Kingman-Havasu 230-kV transmission line if the Griffith Project is built. The tap would improve the stability of the existing line if Citizen's doesn't build the 230-kV line. The tap is expected to use the same route as the construction powerline shown on Figure 2.1-3 in the Draft EIS.

No.	Comment	Response
123.	*Clean Water Act Section 402 Permits*. In the State of Arizona, EPA is the permitting authority for the National Pollution Discharge Elimination System (NPDES) program, which is mandated by Section 402 of the Clean Water Act. Thus, EPA is responsible for issuing NPDES permits to facilities located in Arizona. As described in Section 401 of the Clean Water Act, the role of the Arizona Department of Environmental Quality (ADEQ) is to review and certify that each permit ensures compliance with state-established water quality standards. NPDES permits are designed to ensure protection of surface water resources and are required by all facilities proposing to discharge pollutants to waters of the United States. The DEIS correctly notes that stormwater permits will be required for the proposed project. A Construction Stormwater Permit would be required for construction site run-off. For all discharges of pollutants to waters of the United States, the facility will be required to obtain on NPDES permit. If the facility is classified as a new source, EPA would be required to comply with the requirements of NEPA prior to permit issuance (40 CFR 122.29(c)). For further information on the process to be followed in determining new source status, as well as other permit requirements, the project applicant should contact Terry Oda, Chief, Office of Clean Water Act Permits and Standards, at (415) 744-1923, or Laura Gentile, EPA Water Division, at (415) 744-1913. The FEIS should discuss whether the project would be identified as a new source.	The project is designed to be a zero-discharge facility with no discharges to waters of the U.S. and therefore would not require an NPDES permit for process discharges. A Construction Stormwater Permit would be obtained for runoff from the plant site during construction. Stormwater from the site during operation would be routed to the brine pond so no discharge would occur.

No.	Comment	Response
124.	Water Quantity. According to the DEIS, maximum annual groundwater withdrawal would be 5,323 acre-feet per year, with a more likely average withdrawal of 3,064 acre feet per year. According to the DEIS, natural annual recharge to the Sacramento Valley aquifer is estimated at 4,000 acre-feet/year. The water from the Sacramento Valley aquifer eventually discharges into the Colorado River (30 miles away). On page 4-13 of the DEIS, Western states that in combination with the proposed project and other cumulative impacts the discharge of 4,000 acre-feet/year of water to the Colorado River could cease, but that considering the flow of the Colorado River is very large (11,040,000 acre-feet), "it is unlikely that the Sacramento Valley aquifer contribution would be missed." EPA considers a volume of water that would cover 4,000 acres one foot deep, to be a significant volume of water.	Your comment has been noted.
124a.	As described in the NEPA section of our comment letter, we recommend that on the FEIS, Western analyze alternatives which could reduce water use. In order to understand the various water needs of the proposed facilities, in the FEIS, under description of the Proposed Action, Western should include the percentages of water consumption per plant function (referring to uses of water at the powerplant as described in paragraph 1, page 2-3 of the DEIS).	A new table showing the water consumption associated with various plant functions has been developed and included in the Final EIS. See addendum for Section 2.1.1.2.1 in Chapter 2, of the Final EIS.

No.	Comment	Response
125.	*Water Quality*. The DEIS notes that the majority of wastewater requiring disposal would be produced by cooling tower blowdown. As proposed, waste streams would discharge to a 25-acre evaporation pond, with concentrations of potentially toxic constituents increasing over time through evapoconcentration. These products would be removed and disposed of according to applicable regulations at the end of the project life. Again, in the FEIS, Western should develop alternatives which would reduce or minimize this waste stream. Western notes that the proposed pond facility would likely require an Aquifer Protection Program (APP) permit from the Arizona Department of Environmental Quality (ADEQ) and would probably require monitoring requirements to detect potential pond leakage. In the FEIS, and ROD to follow, Western should describe and make a commitment to vadose zone and groundwater monitoring. In the FEIS, Western should provide further information on the proposed pond design, including the storm event capacity, amount of freeboard, and contingencies in the event of an unexpected storm event, much greater than design capacity.	The current plan includes features that minimize both water use and waste stream production. The primary feature is the plan to recycle water several times as indicated in the Draft EIS. This will be accomplished by using a newly developed reverse osmosis system to bring the water back to reusable composition after each cycle. The current preliminary design of the plant plans to recycle the water up to 12 times. Information on the planned groundwater monitoring system and the pond design parameters have been added to the Final EIS. See the addendum Section 2.1.1.2.1 in Chapter 2.

No.	Comment	Response
126.	*Technical Water-related Questions*. On page 3-7 of the DEIS, it states that previously demonstrated well capacity in the aquifer ranges from 25 to 725 gpm, yet the project proposes to drill six wells with production of approximately 1000 gpm per well (page 2-3). In the FEIS, Western should clarify whether the expected well capacity is realistic. Expected drawdown was modeled using the simulation model "THWells." In the FEIS, Western should note whether this is a validated model, and widely used and accepted for this type of modeling. The FEIS should also include information on other well pumping tests conducted in the general area, and ensure that this information has been considered in the simulation. The "hydrologic boundary" locations, as shown on Figure 4.2-4, should be explained in the FEIS. Any impacts to existing springs, including those whose locations are shown on Figures 3.2-2a, from the modeled groundwater withdrawal, should be described in the FEIS, and appropriate mitigation and/or monitoring proposed. We also note that the range labels do not match between Figure 3.2-2a and Figure 4.2-4.	The withdrawal projections of 3,300 gpm utilized six wells each pumping 550 gpm. The rationale for this rate of discharge was based on the average yield of wells in the basin. Should tests on the initial production well now being drilled prove that a higher rate of yield can be sustained then the projections can be modified. The program THWells was used to make a preliminary estimate of the drawdown caused by the withdrawal of 3,300 gallons per minute. The rationale for using this simplistic model for the preliminary estimate is that hard aquifer parameters are extremely limited at the time of the estimate. Consequently, the data used for input to the model were primarily assumptions. Thus using assumed or estimated input in a complicated model would not give results that were more "correct" than those given by THWells. Data is presently being collected from the drilling and testing of the wells being drilled for the Griffith Energy project. The program THWells calculates the drawdown or buildup of piezometric head based on discharge or recharge wells. The calculation of total drawdown is based on the Theis and Hantush-Jacob equations for non-steady state flow in an isotropic, homogeneous aquifer of infinite areal extent under confined or leaky confined conditions respectively. The model can be used for unconfined (water-table conditions) aquifers when the calculated drawdown in the model are less than half the saturated thickness of the aquifer. Boundary effects can be included through the use of image well theory. The resulting drawdowns are then superimposed on the existing water table,. Use of the THWells model to calculate a preliminary estimate of the drawdown caused by withdrawal of groundwater under unconfined (water table) conditions is applicable, as the projections for the demand of this project result in a drawdown of only 12 percent of the thickness of the saturated aquifer. Further, drawdowns resulting from groundwater

No.	Comment	Response
126 (cont)		(cont.) withdrawal have been projected for the worst case (maximum consumption) conditions to conservatively estimate the effect of withdrawal. Most of the springs and seeps issue from the igneous, metamorphic and volcanic rocks in the mountain areas, and no springs are known to issue from the alluvium on the valley floors (Gillespie and Bentley, 1971). To feed the springs, the source for the springs must be upslope. This would indicated that the sources of the springs or at least 600 feet and in most cases significantly greater than 600 feet above the regional water level. Therefore, changes in the water level in the alluvial valley fill cannot effect the sources of water feeding the springs. In summary, the pumping rate is based on results derived from other wells in the region, and will be re-assessed with the development of the well field. The model THWells is a commercial software model which is used to assess drawdown or buildup of piezometric head due to the combined effect of multiple wells. It was revised in both 1992 and 1994 by P.K.M. Van der Heijde and is available from the International Ground Water Modeling Center. Published hydrogeologic data from the Sacramento Valley aquifer was used in the development of the site conceptual model and model setup. Hydrologic boundaries were established in conjunction with published geological data, and boundary effects could be ascertained using image well theory. Springs in the valley are located above the valley floor, and issue from fracture systems in the igneous, metamorphic and volcanic rocks. Drawdown within the Sacramento Valley aquifer will not affect spring flow from this topographically distant and hydrogeologically separate aquifer. Additional information on the water balance of the Sacramento Valley aquifer is included in an addendum in Chapter 2 of the Final EIS.

No.	Comment	Response
127.	*Potential Impacts of the Proposed Brine Disposal Pond*. The brine disposal pond would receive waters which eventually "...would exceed aquatic and wildlife effluent dependent surface water standards for chronic and acute exposure" (page 4-10 and Table 4.2-2). We found this statement to somewhat contradict information presented under the environmental consequences for wildlife section, on page 4-28. Here it states that chemical constituents "may" achieve acute or chronic toxic levels over the life of the Project. In the FEIS, Western should quantify the likelihood of the pond chemistry to be toxic. (See "Methodology and scientific accuracy", 40 CFR 1502.24.) We also note that while Western acknowledges that the brine would or could be toxic, the DEIS goes on to state that "...if birds do utilize the pond, no impacts are anticipated since the water would be of no higher TDS...than seawater." This statement appears to have little scientific basis, and should be removed from the document. In the FEIS, Western should more accurately describe the potential for bird poisoning from contact with the pond, and discuss monitoring and mitigation options. We recommend that you consult with Arizona Game and Fish Department and the U.S. Fish and Wildlife Service on this matter.	See responses to Comments No. 4, 13 and 35.
128.	*Wildlife Surveys*. On page 3-33, of the DEIS "a survey of the proposed Plant site" is mentioned. A reference should be provided for this survey in the FEIS. It is EPA's impression that a very cursory, screening level, inspection has been completed. We strongly recommend that Western work with USFWS in the formal consultation process, and also with the Arizona Game and Fish Department in determining the appropriate level of surveys required, prior to decisions being made (See our comment number 3, under NEPA).	See response to Comment No. 119. Western has completed the consultation process with the U.S. Fish and Wildlife Service. In addition, Western will continue discussions with the Arizona Game and Fish Department and the Bureau of Land Management regarding the need for preconstruction surveys and construction and post construction monitoring. With the exception of surveys and monitoring for the desert tortoise and post construction monitoring of the brine disposal pond, no other surveys are currently envisioned.
129.	*General*. EPA has been working with ADEQ in the technical review associated with the required Prevention of Significant Deterioration (PSD) permit for plant operation. We expect to continue working with ADEQ on this process.	Your comment has been noted.

No.	Comment	Response
130.	*Air Impacts From Proposed Cooling Tower*. Western should note in the FEIS whether the air modeling included modeling PM_{10} emissions from the proposed cooling towers.	The PM_{10} emissions include both the particulate emissions from the stacks and the cooling towers. See the **Final EIS Corrections Table**.
131.	*Construction Air Impacts*. The FEIS should provide estimates of construction-related emissions, whether they would be below the National Ambient Air Quality Standards (NAAQS), and summarize the appropriate and planned mitigation and monitoring procedures.	Please refer to Section 4.3.2.1.5, Construction Emissions that has been added as an Addendum to Chapter 2 of the Final EIS.
132.	*Traditional Cultural Properties*. EPA encourages Western to continue its Government to Government consultation with potentially effected tribes. We are concerned that traditional cultural resources may especially be threatened at the proposed Peacock Substation. The DEIS states (page 4-37) that "the extent to which this site might be impacted, if at all, would depend primarily upon site selection and engineering design." We strongly recommend completion of additional surveys, in concert with Tribal consultation, and avoidance, if at all possible, of these sites. The FEIS should outline the Government to Government consultation process utilized and describe progress made to eliminate and/or reduce any impacts to traditional cultural properties.	See response to Comment No. 119.

No.	Comment	Response
133.	*Programmatic Agreement, Class III Surveys, and Consultations.* Under Mitigation, Table 2.1-4, item 8, the DEIS states that "cultural resources would continue to be considered...in accordance with the programmatic agreement that is being developed in conjunction with preparation of the EIS." In the DEIS, Western should clarify with whom this agreement is being made, and the nature of the agreement. Page 4-34 of the DEIS notes that Class III archaeologic surveys would be completed before final design, and at that point Western would proceed with the Section 106 consultation with SHPO. We recommend that appropriate surveys be completed prior to the FEIS (and commitments be included in the ROD), to ensure appropriate project siting and ensure that cultural or historical resources are avoided as much as possible.	See response to Comment No. 119. Also, Table 2.1-4, Item No. 8 has been corrected. Western will not pursue a programmatic agreement for compliance with the National Historic Preservation Act. Western will abide by the normal consultation process to meet its obligations under the National Historic Preservation Act.
134.	We recommend modification of the Mitigation table, 2.1-4. The listed mitigation is often very general and is not cross-referenced by resource category to be mitigated. In various portions of the DEIS text, Western describes specific project-related mitigation and/or monitoring. We strongly recommend that all important mitigation and monitoring information be presented in a matrix-style table and referenced by resource category. The table should include various mitigation and monitoring requirements of specific permits. In general, EPA recommends that project mitigation be done in the following order of preference: avoidance, minimization, rectification, reduction, and least preferred, compensation (see 40 CFR 1508.20). Additionally, monitoring provisions should be tied to contingency plans, in the event that monitoring detects adverse environmental effects.	Table 2.1-4 has been revised to reflect the resource categories affected by the proposed mitigation. The revised table is included in the Addenda section of the Final EIS. In addition, the table has been updated to reflect current BLM tortoise mitigation requirements.

No.	Comment	Response
135.	*Comparison of Short Term and Long Term Disturbance*. Western describes the short term surface disturbance for the proposed Griffith-McConnico transmission line segment (8 miles) to be 124.7 acres (Table 4.17-1, pg. 4-92). However, Table 2.1-3, on page 2-17, only describes 12 acres of temporary disturbance. These two tables should be made to agree in the FEIS, and clarification provided why so much surface disturbance may occur along the Griffith-McConnico segment. We found table 2.1-3 confusing to read. Additional clarification or simplification of this table should be provided in the FEIS. We also recommend that Western "tie" Table 2.1-3 with Figure 1-1, which breaks down the proposed construction, by providing a letter identification to each proposed segment. The letter identification should be applied to Table 2.1-3, so that the reader may have a better visual feel for potential surface disturbance.	The short-term surface disturbance for the proposed Griffith-McConnico transmission line segment would be about 12 acres as depicted in Table 2.1-3. A correction to Table 4.17-1 has been provided. Table 2.1-3 has been modified to reflect the segment designations on Figure 1.1-1 and included in the Final EIS.
136.	The information regarding seismic events may be incorrect. On page 3-2, Western twice refers to an earthquake of Magnitude 9.9. We are not aware of such a large earthquake in the recent past located anywhere in the region. Assuming use of the Richter Scale (please specify). This information should be corrected or clarified in the FEIS.	See response to Comment No. 102.

COMMENTER	ORGANIZATION	CITY/STATE
William J. Burke	National Park Service, Lake Mead National Recreation Area	Boulder City, NV

137.	One last comment that I did not have the answer to before the official National Park Service comments were mailed to you. On page 3-29, Mohave Desert Tortoise (Threatened). The only critical habitat designated in Arizona for the Mohave Desert Tortoise is in the Grand Wash area of the Arizona Strip, north of the Colorado River. There is no critical habitat for the Mohave Desert Tortoise in the Black Mountains of Arizona.	See response to Comment No. 71.

COMMENTER	ORGANIZATION	CITY/STATE
Earl Havatone	Hualapai Nation, Office of the Chairman	Peach Springs, AZ

No.	Comment	Response
138.	This letter is to provide comments on the Draft Environmental Impact Statement for the Griffith Energy Project in northwestern Arizona. The Hualapai Tribe traditionally occupied the majority of northwestern Arizona prior to establishment of our Reservation in 1883. As such, the area where the Griffith Energy Project is proposed to be located was once the home to many of our people. Our dead are buried there, our rock writings are scattered throughout the area and the area in general is sacred to our people. **We do not want the Griffith Energy Project to desecrate our sacred homelands.** In addition, the Draft EIS does not adequately address Traditional Cultural Properties (TCP's) of the Hualapai Tribe.	Your comment has been noted. Western fully intends to address the Hualapai's traditional cultural resource properties in its decision making process. See response to Comment No. 119.
139.	Furthermore, we feel that the pollution from the emissions has the potential to negatively impact our economic security by increasing regional haze entering Grand Canyon. On the west end of our Reservation the Tribe has an enterprise called Grand Canyon West where tourists are brought to enjoy the beauty of Grand Canyon. We feel that the emissions from the plant will reduce the beauty and attraction of Grand Canyon West and therefore reduce our economic sustainability. This is especially true because we have recently been made aware that Griffith has applied to be allowed to burn oil instead of natural gas.	Please see addendum in Chapter 2 of the Final EIS added to provide an update on regional haze inputs. No fuel other than natural gas will be burned to drive the two gas-fired turbines and the steam turbine.
140.	Not only could the emissions affect tourism at Grand Canyon West, but also the Tribe's river running business. The beauty of Grand Canyon from the river could also significantly decline due to emissions from the plant. Our Tribe depends on these incomes to feed our people and heal our sick. Our air quality is already affected enough from the Mohave generating station in Laughlin, Nevada. Enough electricity is already being generated without creating another source of pollution.	See response to Comment No. 139.

No.	Comment	Response
141.	Furthermore, we feel that consumption of 3,300 gallons of water per minute (or more) will negatively affect springs and water supplies to Kingman and the Hualapai Reservation. How long can you pump that much water before northwestern Arizona goes dry?	See response to Comment No. 126.
142.	We also feel that the proposed brine pond, which has the potential to reach toxic levels, is too hazardous to wildlife and the citizens of Mohave County and the Hualapai Reservation. How will they dispose of toxic waste? Will it be transported by train right through Peach Springs on the Hualapai Reservation? Many species that are sacred to our Tribe such as the Bald Eagle, waterfowl, Golden Eagles and various hawks are known to inhabit or migrate through the project area. We know that individuals of these species will be lost at the pond and also due to collisions with power lines. These losses are unacceptable to the Hualapai Tribe.	See response to Comments No. 4 and 5.
143.	Before European settlers, northwestern Arizona had some of the most spectacular scenery and vistas in the world. With development came eyesores such as transmission lines. Our Reservation and northwestern Arizona, in general, is overcrowded with transmission lines. **We don't want any more!** Our traditional lands have been scarred enough. We do not believe that the need is great enough to justify more transmission lines. We do believe, however, that the true purpose and need of the project is for the project proponents to make a profit while they degrade our environment. **We don't need it!**	Your comment has been noted.
144.	Finally, while we were informed that a public scoping meeting was taking place in Kingman, the Hualapai Tribe deserves a much more formal consultation than was provided. This is especially true considering the potential impacts the project could produce.	Your comment has been noted. Western and Griffith representatives addressed the Hualapai Tribal Council on March 6, 1999 to address Hualapai concerns with the Griffith Energy Project.

COMMENTER	ORGANIZATION	CITY/STATE
Robert L. Arnberger	National Park Service, Grand Canyon National Park	Grand Canyon, AZ

No.	Comment	Response
145.	We have completed our review of the PSD application for the Griffith Energy Project proposed near Kingman, Arizona. The facility would be located approximately 95 kilometers south-southwest of Class I Grand Canyon National Park, and 40 kilometers east of the closest boundary of Class II Lake Mead National Recreation Area. We understand that the proposed project consists of two natural gas-fired, combined cycle turbines, and that proposed emissions are as follows: 376 tons per year (TPY) of nitrogen oxides (NO_X), 247 TPY of particulate matter (PM_{10}), 50 TPY of sulfur dioxide (SO_2), 308 TPY of volatile organic compounds, and 863 TPY of carbon monoxide. Our comments on Griffith's best available control technology (BACT) analysis and the assessment of air quality impacts at the National Park Service areas follow. We commend Griffith for its choice of controlling NO_X emissions from the turbines by using natural gas as the only fuel, and by using Dry Low-NO_X combustors with Selective Catalytic Reduction. We agree that the target NO_X emission limit of 4.5 ppm represents BACT for this application. The proposed PM_{10} emissions appear unusually high for natural gas firing. We suggest Griffith verify the accuracy of the proposed PM_{10} emissions.	Western received a copy of this comment directed to the New Source Unit Manager, Arizona Department of Environmental Quality. The comment is based on NPS review of the PSD application for the Griffith Energy Project rather than the Draft EIS. Western has included the comment in the Final EIS because the comment is related to other comments on the Draft EIS regarding air emissions and provides supplemental information.
146.	The modeling results contained in the application indicate that the impacts of NO_X, SO_2, and PM_{10} at Grand Canyon National Park are below the Class I increment significance levels for all averaging periods. Therefore, a cumulative Class I increment analysis is not necessary.	See response to Comment No. 145.

No.	Comment	Response
147.	In our April 10, 1998, letter to Donna Lucchese of your staff, and in subsequent conversations with Ms. Lucchese, we asked that Griffith perform deposition and visibility analyses for both Grand Canyon National Park and Lake Mead National Recreation Area. We were copied on Ms. Lucchese's June 9, 1998, letter to Griffith's consultant that gave a detailed description of the required analyses for the National Park Service areas. Regardless, these analyses were not performed for Lake Mead National Recreation Area. We ask that Griffith perform the analyses so that we can assess potential impacts at the area.	See response to Comment No. 145.
148.	The calculated deposition amounts for Federal areas reported in Table 19.3-2 of the application are incorrect. It appears that Griffith made a mistake when performing the last step of the calculation. The correct modeled increases in annual nitrate and sulfate deposition from the Griffith facility at Grand Canyon National Park are 0.30 kg/ha/yr and 0.003 kg/ha/yr, respectively. We don not expect Griffith to substantially contribute to deposition at the park.	See response to Comment No. 145.
149.	The regional haze analysis for Grand Canyon National Park was performed using the screening technique from the Environmental Protection Agency (EPA) document *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 1 Report:* Interim Recommendations for Modeling Long Range Transport and Impacts on Regional Visibility (April 1993). The results reported in the application indicate 17 days out of the 545 modeled had a greater than 5 percent change in extinction. Two of the 17 days had modeled impacts greater than a 10 percent change in extinction. The National Park Service considers a 5 percent change the threshold above which there is a significant impact on visibility. Our adverse impact determinations are based on the magnitude, frequency, and duration of impacts. The frequency and magnitude of occurrences reported in the application is adverse.	See response to Comment No. 145.

No.	Comment	Response
150.	There are several steps for addressing the projects' potential visibility problems at Grand Canyon National Park. Since PM_{10} emissions figure significantly in the regional haze calculations, the first step would be to re-examine the proposed PM_{10} emission rate. If Griffith determines that a lower PM_{10} emission rate is appropriate, they should re-calculate the regional haze numbers to determine if there is a reduction in the number of days with visibility impacts. The second step would be to perform a refined visibility analysis for the Griffith facility alone using the EPA CALPUFF modeling system. The CALPUFF modeling system can more accurately calculate the chemistry involved in the formation of the ammonium nitrate and ammonium sulfate particles than the more conservative IWAQM screening technique that uses the EPA ISCST model. Therefore, the CALPUFF modeling system may indicate a reduction in the frequency and/or magnitude of the visibility impacts at Grand Canyon National Park. The third step, if necessary, would be to perform a cumulative visibility analysis.	See response to Comment No. 145.
151.	National Park Service policy is that, if a source's impact is greater than a 5 percent change in extinction, the source has the option of performing a cumulative regional haze analysis and demonstrating that the impact from all increment-consuming sources is less than a 10 percent change in extinction. This cumulative visibility impact analysis can only be performed using the CALPUFF modeling system. We suggest Griffith contact John Notar of the National Park Service Air Resources Division at (303) 969-2079 for further guidance on the visibility analyses.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
Richard Beebe		Tracy, CA

No.	Comment	Response
152.	I will assume Western's EIS is limited in scope to the routing of the 230-kV lines. I have no issues with these routings. I do have a couple concerns relating to the powerplant, itself. Regarding the water use: I find the lowering of the Sacramento Valley water table by 100+ ft over 40 years to be a real concern, especially in an arid environment. (Reminds me of the LADWP vs. Owens Valley groundwater pumping conflict in Eastern California.) 1. The distance to the Colorado River prevents its use - why not move the plant's proposed site? (closer to, say, Davis Dam, where access to the 230-kV lines remain and the river water is within reach?)	See responses to Comments No. 34 and 118a for siting information.
153.	2. Can the plant's cooling tower design be reworked to reduce or eliminate the wasting of the water used for cooling? (create a "closed system" for water use: minimize the need for water, beyond a minimal make-up need?)	See response to Comment No. 118 for information on cooling alternatives.
154.	3. Can the Griffith plant operators work with local cities to create a water-reuse system for their wastewater effluent, for a portion of the plant water make-up - the RO/DI system will further treat the water for steam, and their cooling water system will have chemical treatment, as well. At least a portion of this 3,000+ to 5,300+ AF/yr groundwater pumped may be eliminated: an environmental benefit, and good AN A-76 TEAM (TEAM) WAS CHARTERED TO COMPLETE A STUDY ON WESTER for the plant operators. (In my local area, a couple of cities are constructing RO/UF wastewater reuse facilities, based upon Orange County, California's Plant 21.)	Water reuse was considered in two different ways for the Griffith Project. First, water from Kingman's waste water treatment plant was considered as a potential source of water for the project but was not viable because of volume and quality limitations. Secondly, reuse of waste water from the Griffith Plant was considered but became not viable when it was decided to recycle the water several times in the plant to minimize water consumption. The resulting quality of the discharged water would be unsuitable for other uses as a result.

No.	Comment	Response
155.	Regarding plant size: The Executive Summary lists the plant size as 520 MW; while the update notes a max. capacity of 650 MW. How big a plant is really being intended? Will we see a larger proposal in the Final EIS/EIR? I don't know whether my concerns will be heard, but they are at least conveyed, and hopefully received. Thank-you for an opportunity to express my interest. I look forward to further comments, if allowed, and opportunities to contribute input in the future.	The proposed power plant is a baseload 520 megawatt (MW), natural gas-fired, combined cycle electrical, generating facility that has the capacity of generating as much as 650 MW when demand requires peak firing capacity.

SUBSTANTIVE PUBLIC HEARING COMMENTS AND AGENCY RESPONSES

COMMENTER	ORGANIZATION	CITY/STATE
Voice From Audience		

A.	Ideally our comments are made to them [Western representatives], not to Griffith Power Plant, correct, people? Because that's what this hearing is about, for them to hear our comments because they make the decision whether or not this is passed.	Western's decision is whether or not to approve an interconnection with the Parker-Davis and Pacific Northwest-Pacific Southwest Intertie transmission systems. Western's decision making process will consider the environmental impacts of all components of the Griffith Energy Project, but Western does not have any jurisdiction over the Griffith power plant siting and design. Also, see response to Comment No. 115.

COMMENTER	ORGANIZATION	CITY/STATE
Frank Puglia		Kingman, AZ

No.	Comment	Response
B.	The first thing I'd like to point out is that in the environmental impact analysis that was done here in this study, they are telling us that there's going to be a brine disposal pond located on the grounds of the facility. This pond, from the limited amount of understanding I have, is used to facilitate the operation of the plant. And included in the soup that we're going to have in this pond are items such as barium, cadmium, chromium, copper, mercury, selenium, silver, and zinc. And they state here, for the record, that there's "potential contamination hazard from storage and use of fuels, lubricants and other fluids during construction and operation," so there is a potential for contamination.	See responses to Comments No. 4, 13 and 35.
C.	So the first thing I want to point out is that we're going to have a pond out there that's going to contain chemicals in it. Now, this pond could possibly leach into our water table eventually. Now, look at what's happened in Las Vegas. There's a plant in Las Vegas that's been there for -- been gone for 10 years or 15, 20 years, and we just now have discovered that there's perchlorate in Lake Mead. It filtered down through the washes from the rains, and it made its way down there to Lake Mead, and now we got fish that have low sperm counts because of it, among other things. It is identified as a potential cancer causing agent, so -- the perchlorate.	See responses to Comments No. 4, 13, and 35.

No.	Comment	Response
D.	Now, these chemicals, I guess I should call them, that they're showing here also pose a threat to wildlife, because what happens is that it looks like water to these birds and animals, and they go up to it and they drink it. It might even taste like water. It might be fenced in, so you may only have the birds flying into it. The point is that we have a pond out there that needs -- we've got chemicals in it and that needs to be addressed.	See response to Comment No. 4.
E.	The number one thing that I think needs to be addressed is that this chemical pond needs to be properly lined, properly installed, and whatever agencies are in place in order to ensure that the company that's installing the plant follows the regulations that the federal government has laid out in construction of that pond.	See response to Comment No. 35.
F.	So my number one thing is, it's important that if this plant is going to be here, which it probably is, folks, then we -- what we need to do is make sure that everything is constructed properly, and we need to make sure that things -- everything is thought of.	See response to Comment No. 35.
G.	For example, let's talk about possibly making this a closed pond so that the waterfowl will not get into the pond and get contaminated. I don't know anything about technology for those power plants, but I guarantee you that anything's possible; and if they look into it, it might be feasible. So that's one point that I'd like to make for the record, is that I oppose the pond with the chemicals in it.	See responses to Comments No. 4 and 13.

No.	Comment	Response
H.	The next thing I'm going to talk about here is more -- in the environmental impact analysis. I'll read it verbatim right here, in case some of you haven't seen this. They're saying that the "loss of 65 acres of habitat would not affect the viability of any species." Well, I don't know who they are and how they can determine that it's not going to affect the viability of any species. It's going to affect some species somewhere, okay, we just don't know what until 20 years from now.	Your comment has been noted. The loss of 65 acres is not anticipated to adversely impact the viability of any species based on the following considerations. First, habitats that would be impacted are not considered significant within the general area. Second, these habitats are common through the general area and the loss of 65 acres is not considered significant. Lastly, all long-term disturbances within BLM designated tortoise habitats on BLM lands will be compensated for with either land or funds by the proponent.
I.	Chemical constituents of wastewater in the brine pond may achieve acute or chronic toxic levels during the plant's life, creating a potential mortality of waterfowl and other birds.	See response to Comment No. 4.
J.	Unacceptable. I don't agree with that. I don't think that we should have a pond that's going to be in the open for our wildlife to get into. So I'd like to make it a point that you put this down in the record that we need to look into the possibility of having a closed system there, if it's feasible.	Covering the pond would be considered in consultation with AGFD if bird mortality problems occur. See response to Comment No. 4.

No.	Comment	Response
K.	Let me just scoot over here to page 3-2, if I can find that. Here we go. They're talking about geologic hazards here. We have a pond that's got a chemical soup in it, and we've got an area here in the county that they're going to put this pond that does have a potential for earthquakes. All right. Now, when earthquakes happen, the ground moves, things slosh around, stuff leaks, things like that. I just want to make sure that they are putting together some kind of a program here to protect our environment, our water, our aquifer from seepage from this pond as a result of earthquakes, because what they're saying here is not much.	See response to Comment No. 35.
L.	They're saying, basically, that there is a potential for earthquakes, but they're not talking about what they're doing to protect us from the chemical soup in case there is an earthquake.	See response to Comment No. 35.
M.	I think that everybody in this room needs to be concerned about it, whether or not they live in a close proximity to that plant or not, because that aquifer -- there's a map somewhere in here that I saw of that aquifer. That aquifer is huge, and it covers a good part of the county. It appears as though it actually goes down to Lake Havasu. Now, I might be mistaken about that, but according to that map, it looks like it does. So we have the potential for a major disaster here in 20 to 30 years if we don't make sure that these people who are building this plant do it right.	Your comment has been noted.
N.	All right. I'm not against the plant, and I'm not against growth. I think we need it, I really do.	Your comment has been noted.

No.	Comment	Response
O.	I think that it's going to be a positive thing for this county, but I also think that we cannot sit by and let these entities build these plants in our backyard without a watchdog eye on them, making sure they follow every single rule. If they can cut corners and save money, they're going to do it. I guarantee you, if they can get away with it, they're going to do it. People have gone to jail for that in the past, and they're going to continue to do it.	Your comment has been noted.
P.	So my opinion is, you know, we're not going to be able to stop this plant from coming in, so if we can't stop the plant from coming in, let's do everything we can to make sure that this plant is going to be safe and it's -- and that our elected officials are going to do everything in their power to put programs into place to make sure that inspections are done and -- and that the plant is being constructed properly, and then once the plant is on-line, that ongoing supervision is in place, because we don't need another generating station out here that throws 2,000 tons of pollutants into the air. This throws 650 tons.	Your comment has been noted.
Q.	If Don Van Brunt is correct, he stated earlier in a conversation that we had in this room, that if we parked two semis -- is it two semis, Don? Three semi trucks out at the Griffith interchange and left them idling out there -- Left them running, that would be about the amount of pollution that this plant is going to produce. Now, I don't know where Don got that from. I don't know if that's a fact or not, but I'll tell you this, it's hard for me to believe, okay, very hard for me to believe.	In terms of amount of pollutants, three semi-tractors running at idle would emit approximately 4.2 tons/year of CO and 1.1 tons/year of NO_2. The proposed Griffith Energy power plant will emit 872 tons/year of CO and 391 tons/year of NO_2 as reported in the air quality permit application filed recently with the Arizona Department of Environmental Quality. In terms of concentrations of pollutants being emitted, an idling semi-tractor would produce an emission stream containing about 25 parts per million (ppm) of CO and 3 ppm of NO_X. In comparison, the concentrations of pollutants that would be emitted by the power plant would be approximately 20 ppm CO and 4.5 ppm NO_X.

COMMENTER	ORGANIZATION	CITY/STATE
Tom Bowman		

No.	Comment	Response
R.	But I think the people of Kingman and the area here, Havasu, Bullhead, and all of our area, definitely needs this extra power plant. It doesn't cost us that much. It don't cost us any money. And if we put another plant in here, which will cost us at least a hundred million dollars, our electric bill will zoom up to 15 percent higher than it is right now, and that's what I'm against.	Because the Project will be a merchant power plant selling wholesale power into the regional market and will not be tied directly into the local power supply, it will not have an effect on local utility rates.

COMMENTER	ORGANIZATION	CITY/STATE
Dean Barlow		

S.	My concern is the reported air pollution levels which will be generated, first by the Griffith Project and then by other plants which are proposed for this area. While we are assured that 1900 tons of air pollution per year will, quote, pose no health hazard, according to the News-Herald in Lake Havasu, and in any case will blow into the mountains anyway, I question both of these statements. According to the newspaper, a hundred tons is considered high level, 1900 tons certainly is a very significant amount. As for it all blowing into the mountains, I just don't believe that will be the case. Lake Havasu City will certainly get its share.	The U.S. Environmental Protection Agency and the State of Arizona have established ambient levels of pollutant concentrations (National Ambient Air Quality Standards (NAAQS)) that would be considerable harmful to the health and safety of the public with an adequate degree of safety. The annual emissions of the proposed Griffith Plant would be 375 tons of nitrogen dioxide, 862 tons of carbon monoxide, 50 tons of sulfur dioxide, 247 tons of inhalable particulates, 308 tons of volatile organic compounds, and 44 tons of formaldehyde. The air quality analysis presented in the Draft EIS and the PSD Permit Application indicated that the maximum levels of pollutants, compared to the NAAQS, that would be exposed to humans would be: nitrogen dioxide - 10.85 percent; carbon monoxide - 6.4 percent; sulfur dioxide - 0.5 percent. So while the annual total of 1900 tons seems high to the layman, the air quality analysis demonstrated that the levels exposed to humans would be less than 10 percent of those levels established to protect the public health and welfare.
T.	Turning this area into a pollution producing industrial complex is not my idea of progress. I would hope that we are not ready to trade a few temporary manufacturing jobs for a quality of life which is the envy of everyone.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
John L. Bridges		

No.	Comment	Response
U.	And if we stopped growth when I got here in 1965, what you would see is no -- no housing, no project any farther than Detroit. You wouldn't see anything farther than Holiday Inn, except for Butler, and that would be the birdlands. You wouldn't see anything in Golden Valley, except for five water fields that Duval put in and about, oh, 30 to 40 houses out there. People move into Kingman. They need a place to work. They need a place to grow.	Your comment has been noted.

COMMENTER	ORGANIZATION	CITY/STATE
Donna A. Garner		

V.	My concern is that we are putting so much time and energy into this power plant when there are other alternative and recyclable sources of energy available.	See responses to Comments No. 8 and 12.
W.	And I quote from 3-7, it says, "Natural annual recharge of the aquifer has been estimated at 4,000 acre feet per year with discharge to the Colorado River west of Yucca equaling recharge."	Your comment has been noted.

No.	Comment	Response
X.	And then 2-31 I quote, "Annual withdrawal of 3,600 -- 3,064 to 5,323 acre feet of water from the Sacramento Valley Aquifer" will be used by the Griffith Energy Plant, "lowering the water table 109 feet over 40 years." Exactly how deep is that water table? It takes generations to recharge a water table like that. And yet, maybe it's a good thing for an immediate source of power. The desert wasn't meant to support vast populations, and it's got a limited resource supply to draw from. Think about the cactus and the different desert plants that grow here. They do so on minimal water. The Indians and the people that roamed this land for generations made do with very little, and we're trying to suck it all dry. We need the power plant, but it needs to be in a different place, where there is recyclable water supply more readily available.	See response to Comment No. 126.

COMMENTER	ORGANIZATION	CITY/STATE
Jack Ehrhardt		

Y.	What this plant represents is not sustainable environmental energy. It's not green, renewable.	See responses to Comments No. 8 and 12.
Z.	You don't put an energy plant in the desert. And this is what I'm addressing to your draft. Where is your logic, your intent in rationalizing the pure physics of putting something that drains the aquifer and then putting something in an area where there's no carbon sink rejuvenation.	See response to Comment No. 12. Emissions to the atmosphere are to be controlled by Best Available Control Technology and the plant would be a zero discharge and permanent waste confinement facility.
AA.	There is no filtration system to absorb the pollutants that come out of this plant.	See Comment No. 145.

No.	Comment	Response
BB.	And I really wish that there was some ratio that you gentlemen could take in giving us that analysis, putting something like this in the desert that doesn't belong here.	Environmental Justice is discussed in Section 4.14 of the DEIS. Also see responses to Comments No. 13, 35, and 126 for responses to water issues.
CC.	Making a statement that is pure and simple, we should have solar and we should have wind energy being used here, but, see, it's not as profitable for certain people, so it doesn't come. These are the hard cold facts.	See responses to Comments No. 8 and 12.
DD.	The other thing that you gentlemen don't point out, what people don't realize and the public needs to be aware of, is a comment called comparative risk. X amount of people in Mohave County -- and you're not going to find this in the report, because you guys aren't required to put it in, but based on emissions that come from plants, the X amount of tons of formaldehyde and chemical emissions that are ingested by people, breathed into their lungs, causes a certain amount of illnesses and sicknesses and deaths. But those comparative risks to the allowance of this type of industry -- and this is a fossil fuel industry, true, it's slated the cleanest, but we don't get to see that. Do you guys have anything that you can provide us that will be the increase from this source pollution plant of the illnesses that will be increased in this community?	The National Ambient Air Quality Standards (NAAQS) that must be met by this plant and other emission sources were developed specifically "to protect the public health and welfare with an adequate degree of safety." Therefore, because the plant would meet the NAAQS standards, an analysis of health effects is not needed.

COMMENTER	ORGANIZATION	CITY/STATE
Kerry Christensen		

No.	Comment	Response
EE.	Let me start by saying that I believe that Mohave County is dependent a lot on tourism for economic development. I think that the U.S. government spent millions of dollars on studying on how regional haze affects recreational and experience in the Grand Canyon. I believe that the air emissions from this plant will only add to that air pollution that's going to decrease the attractiveness of the Grand Canyon to regional tourists. Those tourists come through Mohave county, they spend their money in Kingman buying gasoline and food, and I think, overall, air emission, air pollution is bad for Mohave County.	See response to Comment No. 139.
FF.	I also believe that the transmission lines associated with this plant reduce the aesthetic value and property values in Mohave County.	Since the new transmission line components for the Griffith Energy Project would be parallel and adjacent to existing Davis-Prescott transmission line or developed within a previously approved and permitted rights-of-way (Citizen's Utilities), the proposed project would have a minimal effect on property values. All transmission line components would be developed within designated utility corridors. Aesthetic values have been addressed as reflected in the Draft and Final EIS.
GG.	I'm tired of seeing transmission lines scarring this land, interrupting radio transmissions, and generally degrading the environment.	Your comment has been noted.

No.	Comment	Response
HH.	Wouldn't -- and I'm sure there's nobody that can address it, but wouldn't the proposed Navajo Transmission Project, which would bring a large amount of electricity through Mohave County -- wouldn't that provide the necessary electricity instead of this for-profit-degrade-the-environment proposition?	See response to Comment No. 115 which addresses Western's needs to respond to an application for interconnection from a merchant plant. The primary purpose and need for the Navajo Transmission Line Project is to relieve the constraints on the transmission of electricity west from the Four Corners are to the Desert Southwest. Currently, more energy can be imported from the north on existing transmission lines into the Four Corners area than is capable of being exported with the existing transmission system to the west of Four Corners. This transmission bottleneck essentially precludes economic sales of electricity to markets in south-central Arizona, Nevada, and southern California for which an estimate of future load growth is more than 10,000 MW. The NTP also would improve operational flexibility and reliability of the extra-high-voltage transmission system, allow increased economical power transfers, sales, and purchases in the Rocky Mountain, Four Corners, and Desert Southwest regions, and improve economic conditions of the Navajo Nation. The NTP, if constructed, would benefit the Griffith Energy Project and other proposed merchant plants.
II.	I also agree that this is a desert, that pumping 3,300 gallons of water per minute is outrageous -- -- that reducing the water table 109 feet in 40 years, which is probably a very conservative estimate, is outrageous.	See responses to Comments No. 48, 52, 112 and 126.
JJ.	I'm along with Frank on the brine pond. It has a potential to produce toxic waste. What's going to happen to that toxic waste? Is it going to be put on a train and transported through your neighborhoods, through our communities? What -- you know, what is the disposal mechanism for that toxic waste?	See response to Comment No. 4.
KK.	Unless you fence that, you are going to have loss of significant numbers of species, not only at the brine pond but also through collisions with transmission line -- transmission lines and power poles.	See responses to Comments No. 4 and 5.

No.	Comment	Response
LL.	I do not believe that the draft EIS -- the purpose and need is well enough demonstrated that we actually need that energy.	See response to Comment No. 115 and the Purpose and Need Addendum in Chapter 2 of the Final EIS.
COMMENTER	**ORGANIZATION**	**CITY/STATE**
Joan O'Connor		
MM.	I live out there. I sat down and I figured out how much water they're going to suck out. First of all, it was 1900 gallons, I sat in this room and heard it. Then it was 3300. Joe Hart stood up here and said it was 6,000. You figure it out in your own head how much it's going to come to; 3,000, 3300 is 24 million gallons a year.	See responses to Comments No. 48, 52, 112 and 126.
NN.	How about the birds? The birds go and drink that stuff.	See response to Comment No. 4.
OO.	What happens if that stuff soaks back down into the ground? We're not going to get any benefit from that thing. You know what we use? A generator.	See response to Comment No. 35.
PP.	We use solar. What's wrong with solar?	See responses to Comment Nos. 8 and 12.
QQ.	What happens to the rock and sand when they pull it all out? What happens? What happens to the volcanos?	Rock and/or sand removal would be limited to the area of excavation beneath the proposed brine disposal pond. The excavated earthen materials would be used as fill in site development. Rock and sand removal at the plant site should not influence any possible volcanic activity in the area.
COMMENTER	**ORGANIZATION**	**CITY/STATE**
Bill Garner		
RR.	When this power plant is put in, there's going to be a lot more factories, a lot more houses, and a lot more water sucked out of the ground. And what's the immediate need of this power plant?	See response to Comment No. 2.

CHAPTER 2
MODIFICATIONS, ADDENDA AND CORRECTIONS

MODIFICATIONS AND ADDENDA

This chapter includes new or revised information that replaces or amends the information in the Draft Environmental Impact Statement (EIS). This chapter is organized by Draft EIS sections.

CHAPTER ONE

1.3 Purpose and Need

*Add after the first paragraph for the **Need for the Proposed Action**:*

The Western Area Power Administration (Western) was established on December 21, 1977, pursuant to Section 302 of the Department of Energy (DOE) Organization Act, Public Law 95-91. Historically, Western, by law, marketed Federal power resources predominately to public utilities. Western's transmission system was built primarily to enable the delivery of Federal power to these customers.

The electric industry is currently in transition from a highly regulated industry to one where market forces will develop and shape participants' decisions in the generation and transmission of energy. Making wholesale power markets more competitive is consistent with the Congressional policy reflected in the Energy Policy Act (EPA) of 1992. In particular, the EPA expanded the authority of the Federal Energy Regulatory Commission (FERC) in section 211 of the Federal Power Act (FPA) to order transmission services upon application and it also created a new category of power producers called exempt wholesale generators. Open access to non-discriminatory transmission services is essential to competitive power markets. Without open access, entities that control transmission can delay or refuse to provide the transmission needed for generators to supply customers.

Accordingly, on April 7, 1995, FERC issued a Notice of Proposed Rulemaking for Open Access Transmission Service, published at 60 FR 17662. The proposed rulemaking was addressed in a Final Environmental Impact Statement (FERC/EIS-0096) issued in April 1996. The proposed rule addressed in the Final EIS requires all public utilities owning or controlling interstate transmission facilities to offer non-discriminatory open access transmission services. That is, a utility must offer to provide third parties, to the maximum extent possible, with transmission service that the utility could provide itself on its system. FERC's goal is to encourage lower

electricity rates by facilitating the development of competitive wholesale electric power markets through the prevention of unduly discriminatory practices in the provision of transmission services. The final rulemaking was promulgated on as FERC Order Nos. 888 and 888-A on April 24, 1996, and March 4, 1997, respectively.

Although Western is not specifically subject to the requirements of the FERC Final Order Nos. 888 and 888-A, the Department of Energy has issued a Power Marketing Administration Open Access Transmission Policy that supports the intent of the FERC's Notice of Proposed Rulemaking for Open Access Transmission.

Therefore, on January 6, 1998, Western published in the Federal Register its Notice of Final Open Access Transmission Service Tariff (Tariff). Western adopted the Tariff in order to be consistent with FERC Orders 888 and 888A to the extent consistent with laws applicable to Western's activities.

Under the Tariff, Western offers transmission service for the use of available transmission capacity in excess of the capacity Western requires for the delivery of long-term firm capacity and energy to current contractual electric service customers of the Federal government. In other words, Western provides transmission service equivalent to the service Western could provide itself.

Specifically, under the Tariff, Western will provide Firm and Non-Firm Point-to-Point Transmission Service and Network Integration Transmission Service to the extent that Western has available transmission capability. Western will also perform the necessary studies or assessments for evaluating requests for transmission service as set forth in the Tariff. Any facility construction or interconnection necessary to provide transmission service will be subject to Western's General Requirements for Interconnection which are available upon request. Since Western's rates are developed by region under separate public processes pursuant to applicable Federal law and regulations, the rates and charges for specific services provided under the Tariff are determined from the appropriate Regional rate schedules.

Western's DSWR manages transmission facilities in the states of Arizona, California, and Nevada. DSWR manages a control area operations center through its Desert Southwest Regional Office located in Phoenix, Arizona. The DSWR transmission facilities are interconnected with transmission facilities of several non-Federal entities. For the purpose of implementing the Tariff the transmission facilities and applicable rates of the Parker-Davis Project and the Pacific Northwest-Pacific Southwest Intertie Project will be utilized.

CHAPTER TWO

2.1.1.1 Power Plant

Insert between the second and third paragraphs:

Partially or fully shielded lighting fixtures would be installed to light Plant facilities as necessary in accordance with Mohave County's Outdoor Light Control Ordinance. Shielding fixtures would focus light downward and will minimize light directed upward into the night sky.

2.1.1.2.1 Water Supply and Management

Add to end of first paragraph, page 2-3:

Table 2.1-0 shows the amounts of water used by the various components of the plant.

Table 2.1-0 Breakdown of Water Consumption by the Griffith Power Plant

	GPM	PERCENT
Steam Turbine Cooling	3,173	96.44
Cooling Tower Blowdown	38	1.16
Non-Recoverable Losses	25	0.76

2.1.1.2.1 Water Supply and Management

Insert after the first sentence of the fourth paragraph of page 2-3 as follows:

Demineralized water of the quality required by the Plant would be generated from the raw water using a reverse-osmosis system followed by a demineralizer unit. In addition to the raw water, recycled water would also go through this system. The current plan is to recycle the water up to 12 times.

Insert the following three paragraphs after the first complete paragraph on page 2-4:

The Brine Disposal Pond is a rectangular 25-acre, 10-foot deep pond with 3:1 sideslopes. It would be designed as a zero discharge facility to handle discharge form the plant as well as stormwater runoff from the plant site. The pond would have one-foot of freeboard, and includes storage capacity for 17.8 acre-feet expected to be generated from the 100-year 24-hour storm event of 4.2 inches. The pond has total storage of 240.1 acre-feet of volume, or 196.95 acre-feet of operational volume. The pond would be lined with an impermeable 60 mil HDPE liner.

The Aquifer Protection Permit application submitted to ADEQ contained commitments to verify the integrity of the liner both prior to operations and one year following operations using an electrical leak detection system which would take measurements on a two-foot grid throughout the pond. The liner assessments would be supplemented by monthly visual inspections of the pond embankment and liner throughout the life of the pond.

This plant has a 40-year projected life. In the event that additional brine storage is required to maintain operations, Griffith would build a second pond to the regulatory standards of the times.

Section 3.1 of the Draft EIS indicates that the site lies within a seismic risk zone of 2, with moderate damage projected in association with the maximum earthquakes which could occur. There are no known faults underlying the Griffith facility. The largest recorded earthquake within a 200 km radius occurred 176 km to the west and had a magnitude of 6.1 on the Richter scale. These risks would not pose a threat to the integrity of the Brine Disposal Pond liner. Wave action associated with a seismic event would be contained by the freeboard, or the extra space available between the maximum water level and the crest of the embankment.

Routine groundwater monitoring is not proposed but would be conducted if a leak were detected. A Point of Compliance has been established in the event that monitoring would be required. The Point of Compliance is located within the property boundaries less than 750 feet downgradient from the Brine Disposal Pond. In the event that an investigation into water losses suggests that a leak has intercepted the aquifer, a 4-inch diameter PVC-cased well would be installed to within the top 15 feet of the water table. The Sacramento Valley aquifer is located 750 to 800 feet below the ground surface and the plant site is located within the cone of depression projected for the plant well field, two miles downgradient to the southwest. The water level decline is predicted to be 20 feet in the plant area but could exceed 35 feet under maximum water consumption by the power plant.

Table 2.1-3

Replace Table 2.1-3 beginning on page 2-17 with the following:

Table 2.1-3
Disturbance from Construction of the Proposed Transmission Lines, Upgrades, and Substation

Project Component	Transmission Line Length	Acres Disturbed	
		Temporary	Permanent
Griffith-Peacock 230-kV (30.2 miles; Segments A,B,& C)			
Access Road Needs			
New ROW w/new roads (1.7 A/mile; Segments A & B)	9.1 miles		15.5
Parallel ROW w/existing roads (0.3 A/mile; Segments B & C)	21.1 miles		6.4
Structures			
Single Pole (Segments A & B)	6 structures/mile for 9.1 miles	12.5	0.10
Lattice (Segments B & C)	5 structures/mile for 21.1 miles	24.2	0.25
H-frame (Option (Segments A & B)	6 structures/mile for 9.1 miles	12.5	0.15
Single Pole Option (Segments A, B and C)	6 structures/mile for 30.2 miles	41.5	0.33
Conductor Pull Sites	10 sites	3.6	
Total		**40.3**	**22.31**

Table 2.1-3
Disturbance from Construction of the Proposed Transmission Lines, Upgrades, and Substation

Project Component	Transmission Line Length	Acres Disturbed	
		Temporary	Permanent
Griffith-McConnico 230-kV (8 miles, Segments A & D)			
Access Road			
New ROW w/new roads (1.7 A/mile, Segments A & D)	7.2 miles		12.24
Parallel ROW w/existing roads (0.3 A/miles, Segment D)	0.8 miles		0.25
Structures			
Single Pole (Segments A & D)	6 structures/mile for 8.0 miles	11	0.09
Lattice Option	5 structures/mile for 8.0 miles	9.2	0.09
H-frame Option	6 structures/mile for 8.0 miles	11	0.03
Conductor Pull Sites	3 sites	1	
Total		**12**	**12.7**
Peacock-Davis 230-kV Upgrade (50 miles, Segment Z)			
Access Road Upgrade (0.3 A/mile, Segment Z))	50 miles		15
New Structures H-frame Installed at selected sites	40 structures	9.2	0.03
Conductor Pull Sites	17 sites	6.1	
Total		**15.3**	**15.03**
Peacock Substation			
Facility		20	10
Access Road Upgrade	7.2 miles		2.2
Total		**20**	**12.2**

Table 2.1-3
Disturbance from Construction of the Proposed Transmission Lines, Upgrades, and Substation

Project Component	Transmission Line Length	Acres Disturbed	
		Temporary	Permanent
Griffith-Davis-Prescott Loop (6.75 miles, Segments A & E)			
Access Road			
New ROW w/new roads	3.9 miles		6.6
New ROW w/existing roads	2.9 miles		0.9
Structures			
Single Pole	6 structures/mile for 6.75 miles	9.3	0.07
Lattice Option	5 structures/mile for 6.75 miles	7.7	0.08
H-frame Option	6 structures/mile for 6.75 miles	9.3	0.02
Conductor Pull Sites	2 sites	0.7	
Total		**10**	**7.7**

Note: Options not included in summations.

Table 2.1-4

Replace Table 2.1-4 beginning on page 2-19 with the following:

Table 2.1-4
Mitigation

	GENERIC MITIGATION	RESOURCE CATEGORY
1.	All construction vehicle movement outside the ROW normally would be restricted to predesignated access, contractor acquired access, or public roads.	Soils, Vegetation and Wildlife
2.	The limits of construction activities normally would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.	Visual Resources
3.	In construction areas where recontouring is not required, vegetation would be left in place wherever possible and original contour would be maintained to avoid excessive root damage and allow for resprouting.	Vegetation

Table 2.1-4
Mitigation

	GENERIC MITIGATION	RESOURCE CATEGORY
4.	In construction areas (e.g., marshaling yards, tower sites, spur roads from existing access roads) where ground disturbance is substantial or where recontouring is required, surface restoration would occur as required by the landowner or land management agency. The method of restoration normally would consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. To avoid fragmentation of desert bighorn habitat, fencing would not be used to close roads or otherwise limit access. These instances would be reviewed on a case-by-case basis.	Vegetation, Wildlife
5.	Watering facilities and other range improvements would be repaired or replaced if they are damaged or destroyed by construction activities to their condition prior to disturbance as agreed to by the parties involved.	Land Use, Water Resources
6.	Towers and/or ground wire would be marked with highly visible devices where required by governmental agencies (e.g., Federal Aviation Administration) for aircraft safety.	Safety and Health
7.	Prior to construction, all supervisory construction personnel would be instructed on measures to protect cultural, paleontological, and ecological resources. To assist in this effort, the construction contract would address (a) Federal, state, and tribal laws regarding antiquities, fossils, plants and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.	Cultural Resources

Table 2.1-4
Mitigation

	GENERIC MITIGATION	RESOURCE CATEGORY
8.	Cultural resources would continue to be considered during post-EIS phases of Project implementation in accordance with the programmatic agreement that is being developed in conjunction with preparation of the EIS. This would involve intensive surveys to inventory and evaluate cultural resources within the selected ROW and any adjacent impact zones beyond the ROW, such as access roads and construction equipment yards. In consultation with appropriate land managing agencies and State Historic Preservation Officers, specific mitigation measures would be developed and implemented to mitigate any identified adverse impacts. These may include Project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies. American Indian groups would be involved in these consultations to determine whether there are effective or practical ways of addressing impacts on traditional cultural places.	Cultural Resources
9.	Western would respond to individual complaints of radio or television interference generated by the transmission line by investigating the complaints and implementing appropriate mitigation measures (e.g., adjusting or using filtering devices on antennae). The transmission line would be patrolled on a regular basis so that damaged insulators or other transmission line materials, which could cause interference, are repaired or replaced.	Land Use
10.	Western would apply mitigation needed to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW to the mutual satisfaction of the parties involved.	Land Use
11.	Western would continue to monitor studies performed to determine the effects of audible noise and electrostatic and electric magnetic fields to ascertain whether these effects are significant.	Health and Safety

Table 2.1-4
Mitigation

	GENERIC MITIGATION	RESOURCE CATEGORY
12.	Roads would be built at right angles to the streams and washes to the extent practicable. Culverts would be installed where needed. All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial streambanks. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line.	Water Resources, Vegetation; U.S. Army Corps of Engineers Nationwide Permit provisions may apply.
13.	All requirements of those entities having jurisdiction over air quality matters would be adhered to and any permits needed for construction activities would be obtained. Open burning of construction trash would not be allowed unless permitted by appropriate authorities.	Air Quality; Local air permit may be required
14.	Fences and gates would be repaired or replaced to their original condition prior to Project disturbance as required by the landowner or the land management agency if they are damaged or destroyed by construction activities. Temporary gates would be installed only with the permission of the landowner or the land managing agency.	Land Use
15.	Transmission line materials would be designed and tested to minimize corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.	Noise
16.	Nonspecular conductors, groundwires and dulled structure components would be used to reduce visual impacts.	Visual Resources
17.	No nonbiodegradable debris would be deposited in the ROWs. Slash and other biodegradable debris would be left in place or disposed of in accordance with agency requirements.	Land Use
18.	If required, mitigation measures developed during the consultation period under Section 7 of the Endangered Species Act would be adhered to as specified in the Biological Opinion of the U.S. DOI Fish and Wildlife Service. Also, mitigation developed in conjunction with state and tribal authorities would be adhered to.	Wildlife; Surveys required prior to construction.

Table 2.1-4
Mitigation

GENERIC MITIGATION		RESOURCE CATEGORY
19.	Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.	Water Resources
20.	Near residences, the ROW would be aligned, to the extent practicable, to reduce impact on the residences and inhabitants.	Land Use
21.	Special status species or other species of particular concern would continue to be considered during post-EIS phases of Project implementation in accordance with management policies set forth by the appropriate land managing agency. This may entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities (i.e., access and spur roads, staging areas) as agreed upon by the land managing agency and lead Federal agency. In cases where such species are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat and may include altering the placement of roads or towers as practicable and monitoring construction activities.	Vegetation, Wildlife
22.	The alignment of any new access roads would follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values. This would minimize ground disturbance and reduce scarring (visual contrast).	Visual Resources
Note:	The following selective mitigation measures apply only to specific construction activities that are identified in the EIS or during field investigations.	

Table 2.1-4
Mitigation

GENERIC MITIGATION		RESOURCE CATEGORY
SELECTIVELY RECOMMENDED MITIGATION MEASURES		
1.	No widening or upgrading of existing access roads would be undertaken in the area of construction and operation, except for repairs necessary to make roads passable, where soils or vegetation are very sensitive to disturbance.	Soils and Vegetation
2.	There would be no blading of new access roads in the area of construction and operation. These access routes must be flagged with an easily seen marker and the route must be approved by the authorized officer in advance of use.	Land Use
3.	All new access roads not required for maintenance would be permanently closed using the most effective and least environmentally damaging methods appropriate to that area with concurrence of the landowner or land manager (e.g., stockpiling and replacing topsoil or rock replacement). This would limit access into the area.	Land Use
4.	In designated areas, structures would be placed or rerouted to avoid sensitive features such as, but not limited to, riparian areas, water courses and cultural sites, or to allow conductors to clearly span the features within limits of standard tower design. This would minimize the amount of disturbance to the sensitive feature or reduce visual contrast.	Vegetation, Cultural Resource, Visual Resources
5.	Standard tower design would be modified to correspond with spacing of existing transmission line structures where feasible. This would reduce visual contrast or potential operational conflicts.	Visual Resources
6.	At highway, canyon and trail crossings, towers are to be placed at the maximum feasible distance from the crossing to reduce visual impacts.	Visual Resources
7.	With the exception of emergency repair situations, ROW construction, restoration, maintenance and termination activities in designated areas would be modified or discontinued during sensitive periods (e.g., nesting and breeding periods) for candidate, proposed threatened and endangered, or other sensitive animal species. This list would be approved in advance by the authorized officer.	Wildlife; Condition of U.S. Fish and Wildlife Service for endangered species clearance.

Table 2.1-4
Mitigation

GENERIC MITIGATION	RESOURCE CATEGORY
8. Surface disturbing activities would be limited on the habitat for sensitive status plant species.	Vegetation
9. Towers would comply with Federal Aviation Administration Guidelines to minimize aircraft hazards (Federal Aviation 77).	Health and Safety
10. Desert Tortoise Mitigation Plan	Wildlife
In areas designated by the Bureau of Land Management as Category II desert tortoise habitat, the following mitigation shall be implemented:	
i. Between March 15 and November 15 a biological monitor would be with every cluster of construction workers and every piece of earth moving equipment. This may mean more than one monitor per mile in certain instances.	
In addition, in those areas designated by BLM as Category II or III desert tortoise habitat, the following mitigation measures shall be implemented:	
ii. There would be a biological monitor supervisor for the project.	
iii. Between March 15 and November 15, a walking clearance of working areas (around equipment etc.) would be performed by biologists every morning and evening to check for tortoises. This clearance may be conducted by a biologist or any worker who has been through the tortoise school.	

Table 2.1-4
Mitigation

GENERIC MITIGATION	RESOURCE CATEGORY
10. Desert Tortoise Mitigation Plan (continued)	
iv. Within 48 hours prior to onset of surface-disturbing activities, the construction right-of-way within desert tortoise habitat that is subject to immediate disturbance shall be inspected by a qualified biologist for tortoise and their burrows.	
v. All tortoise found on the ground surface within construction areas shall be moved a minimum of 500 feet (preferably not more than 1/4 mile, but up to two miles from their original location) and placed in a shaded location. Tortoises that wander onto the construction areas during construction periods also shall be removed to a safe location if necessary and shall be moved solely for the purpose of preventing death or injury.	
vi. The proponent shall make every reasonable effort to avoid damage to or destruction of desert tortoise burrows during construction activities. Such avoidance measures may include localized reduction in construction area width.	
vii. Prior to any disturbance, burrows within the right-of way that would be destroyed or disturbed by construction activities such as blasting, road building, etc., must be cleared of tortoises, then collapsed, destroyed or barricaded to prevent further entrance by tortoise. Tortoise within these burrows shall be moved to a safe location. The method of relocation should be determined by tortoise activity levels and ambient ground temperatures. The tortoise should be placed in a natural or artificially constructed burrow by a qualified biologist. Tortoise burrows within construction rights-of-way that are avoidable shall be protected by installation of welded wire fencing (as large as 1' horizontal X 2" vertical) placed at a maximum distance from the burrow allowable by construction activities. If a minimum fence distance from such burrows of 15 feet cannot be accommodated, the burrow shall be excavated. Tortoises removed from excavated burrows during inactive periods shall be relocated to unoccupied natural burrows or artificially constructed burrows.	

Table 2.1-4
Mitigation

GENERIC MITIGATION	RESOURCE CATEGORY
10. Desert Tortoise Mitigation Plan (continued)	
viii. A pre-construction desert tortoise survey by a biologist trained to conduct tortoise surveys is required in all tortoise habitat **no earlier** than forty-five (45) days (preferably no earlier than two (2) **weeks**) prior to construction to identify burrows or other high-use tortoise areas. During these surveys, the status of previous survey results shall be reviewed and habitat features such as desert tortoise burrows shall be flagged and staked. All important habitat features within the construction right-of-way shall be flagged and staked to alert biological and work crews to their presence. Habitat features outside but within 100 feet of the construction right-of-way boundaries that may be inadvertently damaged or destroyed by construction activities also shall be prominently flagged and staked to alert work crews to their presence. Tortoise surveys would be required in all areas of new disturbance, which includes the ROW, new access roads (temporary or permanent), widened portions of existing access roads, equipment storage areas etc. If additional disturbance is anticipated in areas outside of the project area as the project progresses, these should be surveyed as well.	
ix. Artificial burrows to which desert tortoises are relocated during tortoise inactivity periods shall be of similar size, shape, and orientation, and depth as original burrows.	
x. If a burrow is too deep to see the end of it, a fiber optic scope or other device or technique of equal or better quality, shall be used to determine if the burrow is occupied by a desert tortoise.	
xi. All desert tortoises handled shall be checked for symptoms of upper respiratory disease syndrome. The presence or absence of respiratory disease symptoms shall be noted on desert tortoise data sheets and the results included in a report to the Authorized Officer.	

Table 2.1-4
Mitigation

GENERIC MITIGATION	RESOURCE CATEGORY
10. Desert Tortoise Mitigation Plan (continued)	
xii. If a desert tortoise cannot be relocated within two (2) miles from where it was found then that tortoise must be salvaged in accordance with the Arizona Game & Fish salvage techniques for desert tortoise(1992j, Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects).	
xiii. All locations of desert tortoise and their sign would be mapped on a 7½ minute topo map with Township, Range, and Section noted, date, observers name, and vegetation type. Copies of this information would be given to the BLM authorized officer and to the Arizona Game and Fish Department in Phoenix.	
xiv. Proponent is required to obtain all necessary permits for handling or collecting of desert tortoise prior to construction.	
xv. To prevent mortality, injury, and harassment of desert tortoise and damage to their burrow, **no pets** shall be permitted in any project construction area unless confined or leashed.	
xvi. Dust control watering of the ROW within desert tortoise habitat shall be conducted in a manner that would not result in development of ponds that could attract desert tortoises. If ponding is unavoidable, the ponded area and a 5 meter wide buffer area around the pond shall be flagged and staked or otherwise marked to prevent entry by vehicles. Alternatively, ponded areas shall be checked regularly by biological monitors and desert tortoises found in pond vicinities shall be safely removed.	

Table 2.1-4
Mitigation

GENERIC MITIGATION	RESOURCE CATEGORY
10. Desert Tortoise Mitigation Plan (continued)	
xvii. During blasting activities, any desert tortoise burrow that is outside the right-of-way and is not excavated, but may be affected by blasting shall be flagged and staked. Occupying desert tortoises shall be removed by a biologist if they can be extracted without excavating the burrow. If desert tortoise cannot be removed from the burrows, crumpled newspaper shall be inserted to arms length inside the burrow prior to blasting and removed immediately after cessation of blasting. Any tortoises that are removed from burrows shall be held in clean cardboard boxes, one (1) tortoise per box, until they can be safely returned to the sites where they were collected.	
xviii. All construction vehicles and equipment shall be restricted to the ROW and other areas to be disturbed to limit desert tortoise habitat degradation. If necessary, ROW boundaries and other areas to be disturbed outside of the ROW shall be flagged and staked to alert work crews. Areas to be flagged and staked would be identified in the Plan of Development.	
xix. The proponent shall develop and implement a worker education program that addresses (a) the occurrence and distribution of the desert tortoise (and other species of concern) within the construction area; (b) measures being implemented to protect the tortoise and its habitat in the construction area; (c) specific protocols to observe should desert tortoises be encountered in the field.	
xx. In desert tortoise habitat, the proponent shall limit speed of vehicles along the ROW and access roads to 20 mph. Construction and maintenance employees shall also be advised that care should be exercised when commuting to and from the project area to reduce road mortality.	

Table 2.1-4
Mitigation

GENERIC MITIGATION	RESOURCE CATEGORY
10. Desert Tortoise Mitigation Plan (continued)	
xxi. Surface disturbing activities shall be minimized along the entire length of the right-of-way. Existing access roads shall be used for travel and equipment storage. Roads not needed after construction shall be blocked off and scarified. Access roads scheduled for upgrading in desert tortoise habitat should not be widened, if possible, nor should berms be disturbed during grading. New, permanent access roads shall not be created in desert tortoise habitat except where the right-of-way is not adjacent to an existing right-of-way or road. Stockpile areas in desert tortoise habitat should either be relocated to less valuable habitat or minimized in size.	
xxii. The proponent shall make every reasonable effort to avoid damage to or destruction of desert tortoise burrows during construction activities. Such avoidance measures may include localized reduction in construction area width.	
xxiii. All trenches or other excavations with the potential to entrap desert tortoises shall be inspected daily by biological monitors for entrapped tortoises at the following times: (a) immediately prior to initiation of construction activities b) at the end of each workday in all areas, and (c) prior to final backfilling of the trenches and other excavations. All tortoises found inside trenches during these inspections shall be removed immediately by a qualified biologist.	
xxiv. Gap plugs of earthen fill or wood ramps would be installed every 1/4 mile along the open pipeline trench to allow for escape of entrapped tortoises.	
xxv. Cap all pipe ends (e.g., burlap) three (3) to twelve (12) inches in diameter for desert tortoises. Pipe ends not capped shall be inspected every morning and evening for desert tortoise.	

Table 2.1-4
Mitigation

GENERIC MITIGATION	RESOURCE CATEGORY
10. Desert Tortoise Mitigation Plan (continued)	
xxvi. After construction all disturbed areas would be examined by the third party compliance monitor to evaluate reclamation and closure needs. This would be done in consultation with the authorized officer and the proponent. Reclamation is defined as the restoration of the landscape to preconstruction status. Reclamation could include such techniques as recontouring, topsoil replacement and reseeding. Seed mixtures should include only native species which have the greatest success potential and wildlife use.	
xxvii. Compensation would be required to offset any residual impacts after all reasonable on-site mitigation measures are incorporated into an action. An estimate of the amount of compensation would be determined by the third party compliance monitor in consultation with the authorized officer and the proponent. Final compensation would be determined by field inspection by the third party compliance monitor in consultation with the authorized officer and the proponent once surface disturbing activities have ceased.	
11. Locations of all observations of rosy boa would be mapped on a 7-1/2 minute topographical map with Township, Range and Section noted, date, observer's name and vegetation type. Copies of this information would be given to the BLM authorized officer and to the Arizona Game & Fish Department in Phoenix.	Wildlife
12. All rosy boa or chuckwalla found on the ground surface within construction areas would be moved a minimum of 500 feet (preferably not more than one-quarter of a mile, but up to one mile from their original location) and placed in a shaded location. Rosy boa or chuckwalla that wander onto construction areas during construction periods also would be removed to a safe location if necessary and would be moved solely for the purpose of preventing death or injury.	Wildlife

Replace Section 2.2.1.1 Alternative Gas Pipeline Routes with the following:

2.2.1.1 Alternative Gas Pipeline Routes

2.2.1.1.1 Alternative Gas Pipeline Route (EPNGC Interconnection)

An alternative route for the proposed natural gas supply pipeline between the Plant site and the EPNGC transmission line has been proposed by the BLM. This alternative would follow the existing roads on BLM lands (**Figure 2.2-1**). The proposed alternative route would traverse northeasterly across private and BLM lands until it intercepts the existing BLM roads that it would follow to the interconnection with the EPNGC line. Most of the ROW for the alternative route would be returned to use as an improved road. Portions of the construction ROW not needed for the road would be reclaimed as specified by the BLM.

2.2.1.1.2 Alternative Gas Pipeline Route (Transwestern Interconnection)

An alternative route for the proposed natural gas supply pipeline between the Plant site and the Transwestern transmission line is being considered. This alternative would travel due north from the Plant site either in the County road ROW located ½ mile east of the western boundaries of sections 6, 31,30, and 19, T20N, R17W or near this ROW in a separate easement. This route is shown on **Figure 2.2-1**. After construction, the ROW would be reclaimed to landowner specifications.

Insert the following under Section 2.2.1 Power Plant and Associated Facilities:

2.2.1.2 Alternative Temporary Haul Route

An alternative temporary haul route for the delivery of major, heavy equipment to the Plant site has been developed to better use existing local rail facilities. Under this alternative, instead of building a new temporary area to offload equipment at the rail siding due east of the Plant site, equipment would be offloaded at an existing facility at a truckstop approximately six miles north of the Site (see **Figure 2.2-1a**). From there, the equipment would be trucked south on I-40 where it would access the Plant site via the same temporary haul road originally proposed. **Figure 2.2-1b** shows the details of how the trucks would access I-40 from the truckstop. Most haul trips would occur at night to minimize traffic impacts. Traffic control, fencing, and reclamation would be conducted in compliance with an Encroachment Permit to be obtained from the Arizona Department of Transportation.

The use of an existing railroad off-load facility on private land and paved access to the paved I-40 frontage road would limit new disturbance associated with the temporary haul road to approximately 0.25 miles between the Plant site and I-40. As this alternative route would not cross public lands administered by the BLM east of I-40, a grant of right-of-way from the BLM would not be required.

Replace the third paragraph under Section 2.2.1.2 with the following section:

2.2.1.2.1 Alternative Cooling Options

Water is consumed in the power plant for domestic water, service water, demineralized water, fire protection water, and cooling water. The largest single use of water (more than 95 percent) would be for cooling water to condense steam exhausted from the steam turbine and to cool other equipment in the plant. Therefore, the consideration of alternative designs for the plant that could minimize water consumption have focused on selecting a method to minimize cooling water consumption.

The proposed design for the Griffith Energy project minimizes total water consumption by maximizing the number of times that water is recycled through the plant. The number of cycles is approximately 10 to 12 with the upper limit defined by the increasing concentrations resulting from each additional cycle. The cooling tower blowdown is processed in a High Efficiency Reverse Osmosis (HERO) unit to recover the majority of the blowdown flow with the recovered water reused in the cooling tower. The installation of this waste stream processing equipment would add millions to the capital cost of the project, but makeup flow to the cooling tower would be minimized and the waste stream would be reduced to approximately 0.5 percent of the makeup flow.

In addition to the proposed system described above, other alternatives for reducing water consumption were considered and they are described below along with the reasons for their exclusion from detailed analysis.

Open Cycle Cooling

Open cycle cooling is commonly employed on power plants located near a large body of water such as an ocean, lake or river. Cooling water would be pumped from the body of water, circulated through the steam turbine condenser and through other heat exchangers located throughout the plant to condense steam and remove waste heat. Cooling water would be then returned to the body of water at an elevated temperature. Water consumption with this method would be minimal.

This alternative would require location of the power plant near a body of water. The only nearby sources are Lake Mead and the Colorado River. Either of these locations would be in or near a National Recreation Area and would require additional fuel supply piping and possibly longer electrical transmission lines. Due to the close proximity to the National Recreation Area or Grand Canyon, the plant would likely negatively affect visibility and air quality.

Closed Cycle Dry Cooling

Dry cooling employs very large radiators with motor-driven fans to transfer the power plant's waste heat to the atmosphere. Cooling water would be circulated through the steam turbine condenser and through other heat exchangers located throughout the plant, removing waste heat. After leaving the various heat exchangers the cooling water enters the radiators where the fans located on the radiators increase the heat transfer capability by increasing the air flow across the

radiators. Cooled water would be then pumped back through the condenser and heat exchangers in a closed cycle. Water consumption with this method would be minimal.

This method would require the installation of additional equipment including dry cooling heat exchangers, larger circulating water pumps, larger auxiliary transformers, larger electrical switchgear, additional medium voltage breakers and additional controls. The added equipment would increase the total capital cost of the project by approximately 20 percent. Also, this technology would result is a loss of electrical output from the steam turbine generator for all ambient temperatures above 60°F. Local meteorological data shows that the ambient temperature would be above 60°F over 64 percent of the time. In addition, net electrical output of the plant would also be reduced due to the electrical load associated with the radiator fans, larger pumps and transformers.

There are no commercially available steam turbines capable operating with dry cooling while matching the 300 MW generator. Using a smaller steam turbine generator with the necessary high back pressure would result in significant loss of revenue and make the project economically unfeasible.

2.2.2.2 Alternative Transmission Structure Types

Insert the following after Section 2.2.2.2, Alternative Transmission Structure Types, Page 2-28:

2.2.2.2.1 Griffith-Peacock 230-kV Line (Segments B and C)

Single steel pole structures (see **Figure 2.2-2**) would be used for all of Segment C and the portion of Segment B that parallels the existing Davis-Prescott 230-kV transmission line. The proposed ROW would be 80 to 125 feet, depending on design and terrain parameters.

2.2.2.3.1 System and Routing Alternatives

Insert the following under Section 2.2.2.3.1:

Routing Alternatives for Segment D

Because of the visual impacts associated with the proximity of Segment D to I-40, three primary routing alternatives to reach the McConnico Substation instead of using proposed Segment D were considered. One involved a route similar to Segment D that would follow the west side of I-40 instead of the east side until it reached the existing Davis-Prescott Line which it would parallel into McConnico. This was dropped because it would have similar visual impacts from I-40 as Segment D but would not take advantage of the existing rail corridor and would be closer to housing on the north end of the route and, therefore, more visible to the residents there.

A second option was to follow Segment A north to the Davis-Prescott Line which it would parallel from there to McConnico. This was dropped because some residential and industrial development has occurred adjacent to the Davis-Prescott Line since it was built and because, like the original proposed action for the Davis-Prescott interconnection, Segment A would be close to the Walnut Hills subdivision and visible to these residents.

The third option was to follow the same proposed route across I-40 as the proposed route (through Segment A) and continue slightly farther east (along part of Segment B) until it intercepts the second rail line which it would parallel north to the Davis-Prescott Line. There it would turn west to enter the McConnico Substation. This was the only of the three that would have provided potential visual benefits but was dropped because of industrial development along this route on its northern end and because facilities immediately east of the McConnico Substation makes it difficult to route a line into the substation from that direction.

CHAPTER THREE

3.1 Geology/Minerals/Geologic Hazards

Add to end of section on Geologic Hazards in Section 3.1 of the DEIS:

A review of Earthquake Hazard Evaluation, Mohave County, Arizona (Bausch and Brumbaugh, 1997) has indicated that earthquake ground shaking potential at the plant site is low. The potential is also low for the associated facilities and transmission line south and west of Kingman. East of Kingman, there is a moderate ground shaking potential for the transmission line corridor. The report also indicates that no active faults are present in the vicinity of the plant site, associated facilities, or transmissions line segments.

3.2.1.1 Groundwater

Insert the following between the second and third sentences, first paragraph in the section, page 3-6:

The portion of the city of Kingman's water supply currently provided by groundwater comes from the Hualapai Aquifer. In addition, the City owns 44 well sites located in Townships 19 and 20, Range 18 West in the Sacramento Basin. None of these sites are currently developed, but the City of Kingman continues to consider these as a secondary water source for its Municipal Water System.

3.6 Wildlife

The last sentence of the third paragraph, page 3-28, should be modified as follows:

Antelope are not anticipated to occur near the Project area except in the Hualapai Valley area and in the Hackberry Wash Area, east of the Peacock Mountains.

3.7 Cultural Resources

Insert the following after the second paragraph, page 3-38:

The historic Hardyville Toll Road has only been recorded west of the Black Mountains, where it is identified as site AZ:F:15:10 (ASM). The general course of this road would take it northeastward through archaeological site AZ:F:15:27 (ASM), of which a portion lies within the present study area for the EIS, but outside the proposed project's impact corridor. It is not clear that any remnant of the original road remains within the study area. The AZ:F:15:27 site record

appears to imply that the dirt road passing through it is not actually the Hardyville Toll Road, but rather a newer avenue constructed along its course in concert with the development of AZ:F:15:27 as a more recent camp or command post and set of features "related to military maneuvers for WWII or to later military training maneuvers occurring in the mid-1960s (Don Simonis, personal communication 1996)."

As originally built in 1864-1865, the Hardyville Toll Road connected the Fort Mohave area with Prescott, Arizona, and must therefore have extended east of the City of Kingman. However, there is currently no formal record for any portion of the road in the highly disturbed Kingman area. Because such remnants may in fact exist, focused archival and related research will be conducted prior to field surveys for the proposed project.

Traditional Cultural Resource Properties

Of the seven tribes notified of this project (Chemehuevi, Colorado River Indian Tribes, Fort Mojave, Hualapai, Havasupai, Navajo, and Hopi) only the Hualapai Tribe and Navajo Nation expressed interest in providing input. The Hualapai and Navajo have provided comments as of this writing. Members of the Hualapai Office of Cultural Resources and tribal elders familiar with the general project area visited portions of the project area. The elders were interviewed regarding traditional uses of the area and tribal concerns. Greg Glassco of the Hualapai Office of Cultural Resources compiled a brief summary of the results of the visits and interviews and compiled confidential information and transcripts of the interviews to be kept on file at the tribal offices. Richard Begay of the Navajo Nation has provided preliminary comments through ethnographer Scott Russell.

Most of the proposed Griffith Energy Project area is within the traditional use areas of the Hualapai and joint use areas of the Hualapai and the Mojave. General concerns about the project area expressed by the Hualapai include:

- The proposed Plant may use excessive amounts of water in an area where water is scarce and may contribute to air pollution.
- Construction and operation of the Project may increase damage to native plants traditionally used for food, medicine, epoxy and basketry by the Hualapai.
- Construction and operation of the Project will disperse and deplete game in traditional Hualapai hunting areas.
- The Project may disturb or increase access to traditional areas used for burials, pow-wows, ghost dances and rituals.
- The Project may directly disturb or disturb the setting of natural features associated with important legends and creation stories.
- The Project may impact important springs and traditional camping areas.
- Areas crossed by the proposed Project contain or are near caves and rockshelters that have rock writing, burials and other significant traditional materials and features.

- The proposed Project may disturb traditional sources of volcanic stone used for grinding implements and other artifacts important in traditional Hualapai culture.

- The Hualapai are concerned that the lands important to their culture and traditions will not be treated with appropriate respect.

- The Hualapai are concerned that their concerns will not be taken seriously and that the appearance of concern is not honest or sensitive.

The Navajo Nation indicated that the Project area is well west of their reservation lands, and that no regular Navajo activities occur there. However, elders and medicine men may collect special plants when they travel through the area. The medicine men have not yet been consulted and need to visit the area in the Spring when the plants are up. Plants from this area will probably not be of special concern unless they are rare and endangered plants that can no longer be found in other areas. Mr. Begay does not know of any traditional cultural properties in the project area, but there may be shrines or sweat lodges near the area. There are known Navajo sweat lodges west of the Project area. The Navajo are also interested in knowing what archaeological sites are in the area, because archaeological sites are important to their traditions and heritage.

3.7.1 Power Plant and Associated Facilities

Insert the following after the first paragraph in Section 3.7.1, page 3-38:

The Hualapai are concerned about the general effects of the power plant and associated pipelines and power lines on the water and their traditional lands, but have not identified any specific locations or resources within this portion of the Project area.

3.7.2.2 Segment A

Insert the following paragraph after the last paragraph of Section 3.7.2.2, Segment B, page 3-41:

The foothill and mountain areas along proposed Segment B contain many traditional camping areas and the Sacramento and Hualapai Valleys were important areas for collecting seeds. However, no specific locations were identified as important or sacred.

3.7.2.3 Segment C

Insert the following paragraph between the fourth and fifth paragraphs of Section 3.7.2.3, Segment C, page 3-41:

The southwestern one-third of Segment C crossing the fans and foothills of the Hualapai Mountains is an area that is very likely to contain traditional camps and seed gathering areas, but no specific locations were identified. The northeastern one-third of this segment also has a high potential for containing traditional cultural resources. The middle portion of this segment is also of concern, but is likely to contain fewer traditional resources. This includes gathering areas and garden plots on the mountain slopes and in adjacent washes. The Peacock Mountains were also

important as a setting for burials and sacred localities. Many of the most important traditional areas in the Peacock Mountains are north of the proposed Project area.

3.7.2.4 Segment D

Insert the following sentence at the end of the first paragraph, page 4-42:

No areas of traditional concern were identified for proposed Segment D.

3.7.2.5 Segment E

Insert the following sentence at the end of the third paragraph, page 4-42:

The Hualapai elders did not express any specific concerns about this portion of the project area.

3.7.2.6 Segment Z

Insert the following paragraph following the fourth paragraph, page 3-43:

This segment crosses near areas of particular concern to the Hualapai. The areas include traditional collecting areas and sacred areas in the Sacramento Valley, in the Black Mountains and in the Colorado River corridor. There are many known traditional localities and areas near this segment of the project including petroglyph sites, healing areas, traditional trails and passes, springs, caves and traditional natural features such as Thumb Butte. No specific traditional sites were identified along the segment, but many were noted nearby. The potential for traditional and sacred sites is high in these areas, and many of the specific locations have been lost because the people who knew them were killed. One of the concerns of the Hualapai is that the construction activities and improvements to access may increase insensitive traffic to traditional sites.

3.8.1 Power Plant and Associated Facilities

Replace the last sentence of Section 3.8.1, page 3-47, of the DEIS, as follows:

On December 21, 1998, the County Board of Supervisors approved rezoning in Township 20N., Range 17W., of all or portions of Sections 19, 30, 31, in Township 19N., Range 17W., of Sections 6 and 7 and in Township 19 N., Range 18W., of Sections 10, 15 and 16 from A-R/36A (Agricultural-Residential/36 Acre Minimum Lot Size) to M-X (Heavy Manufacturing). This was accomplished by approval of Resolution 98-414. Township 19N., Range 18W., of Sections 12, 13 and the northern half of 14 were previously zoned M-X. The boundary of the entire proposed industrial corridor in Mohave County is shown on **Figure 3.8-2c** at the end of Chapter 2 of the Final EIS.

3.10.2.2 Segment B

Replace the last line of the second paragraph in Section 3.10.2.2, Segment B with the following:

Approximately 5.5 miles of the segment crosses BLM lands managed with VRM Classes II, III, and IV. The Class II lands are located west of the Hilltop Substation. Class IV lands are located on BLM lands nearest to I-40. Class III lands are located on BLM lands south of Kingman.

3.11 Socioeconomic

Urban/Domestic Water Supply

Replace the second sentence of the second paragraph on page 3-67 with the following:

The portion of the city of Kingman's water supply currently provided by groundwater comes from the Hualapai Aquifer. In addition, the city owns 44 well sites located in Townships 19 and 20, Range 18 West in the Sacramento Basin. None of these sites are currently developed, but the City of Kingman continues to consider these as a secondary water source for its Municipal Water System.

Replace Table 3.11-12 and 3.11-13 with the following:

Table 3.11-12

Kingman's Water Resources

	Groundwater/wells
Capacity	15.2 MGD
Average Demand	9 MGD
Storage Capacity	9.9 million gallons above ground

Source: Mohave County Economic Development Authority, Inc.

Table 3.11-13

Kingman's Wastewater Treatment System

Treatment Plants (2)	Secondary treatment - aeration lagoons
Hilltop	2.0 MGD to 3.0 MGD
Downtown	0.53 MGD
Average Demand	1.1 MGD

Source: Mohave County Economic Development Authority, Inc.

CHAPTER FOUR

4.2.2.1.1 Groundwater

Replace the fourth paragraph on page 4-6 with the following:

Land subsidence is the result of the compaction of the underlying unconsolidated sediments. Dewatering a formation consisting of a loose textured material in which the water provides the structural support to maintain the integrity of the formation allows this compaction to occur. Normally, formations which result in subsidence when dewatered are clays and silts. Clays and silts frequently have pore space which constitutes more than 50 percent of the formation compared with sands and gravels where the porosity may be well below 20 percent. When the water level of the regional aquifer falls below these clay and silt formations, the water in the interstices (space between the particles) of the formation slowly drain allowing the fragile structure of the clay to collapse. Usually, dewatering the sand leaves a skeletal structure which is strong enough to support the sand formation. Subsidence rarely occurs in consolidated formations.

The materials encountered in the Sacramento Valley during drilling of the pilot bore of the first well were fairly well indurated, strongly structured alluvium consisting of sands and gravel mixtures with some thin clay layers all of which were cemented to some degree. None of the formations encountered were unconsolidated clays and silts. Also, the proposed pumping rate in the wells is expected to cause a drawdown of 109.5 feet at the well. The drawdown in the regional aquifer 1,000 feet from the well field is projected to be 80 feet and less as the distance from the well field increases. This is relatively small dewatered zone when compared to the amount of structural material above and below. Thus, it appears unlikely that subsidence would occur in the neighborhood of the proposed Griffith Energy well field.

Although the potential for subsidence is low, a subsidence monitoring program has been put in place. A bench mark has been set near the site of Well 1. Its elevation has been surveyed from a nearby US Field Station and would be re-surveyed on an annual basis to determine if subsidence is occurring.

The pumping level in the well would cause a drawdown of 109.5 feet based on the assumed filed conditions, the drawdown in the regional aquifer 1,000 feet from the well field is projected to be 80 feet and less as the distance from the well field increases.

4.2.2.1.1 Groundwater

Insert the following subsection under Section 4.2.2.1.1, Groundwater beginning after the last paragraph on Page 4-7:

Sacramento Basin Water Balance

This analysis of the water balance of the Golden Valley sub-basin of the Sacramento groundwater basin conceptually describes basin recharge and outflow under conditions of equilibrium and assesses the probable effects of the existing and projected withdrawal, as now defined.

The Sacramento Valley is divided into two sub-basins: the Golden Valley sub-basin is that portion of the Valley extending north of Yucca and the Dutch Flat sub-basin extending south of Yucca. The Golden Valley sub-basin is further subdivided into Golden Valley, that area eight miles north and south of Highway 68 across the entire basin (Arizona Department of Water Resources (ADWR), 1994) and the remainder of the sub-basin consisting of the area extending from eight miles south of Highway 68 to Yucca.

The subsurface outflow of the Golden Valley sub-basin passes through a narrow throat near Yucca, the Yucca Narrows, into the Dutch Flat sub-basin. The combined subsurface flow of the two sub-basins then travels west and out through a narrows near Franconia, the Franconia Narrows, into the alluvial fill of the Colorado River Valley.

The slope of the water table data for the calculation of the existing outflow was taken from the published map of Rascona (1991). Comparing the water level map of Rascona (1991) with similar maps in earlier publications by Gillespie and Bentley (1971) and Pfaff and Clay (1981) indicates that the subsurface flow at the Yucca Narrows and the Franconia Narrows reflects a state of equilibrium. Assuming that is true, then the recharge to the sub-basins is equal to the subsurface outflow.

The analysis of the effects from the Griffith Project on the water balance in the Sacramento basin provided in this report is based on a worst case scenario:

- The volume of withdrawal utilized for the Griffith Energy project is overestimated at a continuous withdrawal of 3,300 gallons per minute (gpm), the peak demand, for the forty year life of the project rather than using the average withdrawal of 1,900 gpm projected to satisfy the demand of the plant;

- The withdrawal utilized for the Golden Valley portion of the sub-basin was the maximum volume based upon Arizona Department of Economic Security (DES) population projections and usage of 95 gpd/c in the year 2040 (ADWR 1994) rather than increasing withdrawal through time. In addition, the projections for growth in the entire basin will occur in the Golden Valley area; and

- Preliminary results of the pumping tests indicate that a transmissivity value of 35,000 gpd/ft is conservative.

The Sacramento Valley is a long, narrow graben trending slightly west of north. The graben is bounded on both sides by a series of upthrust, tilted, block mountains.

Interpretation of the seismic profiles by the US Geological Survey (Gillespie and Bentley, 1971) indicate that the Golden Valley sub-basin is a broad, deep (4,400 feet) trough which slopes upward to meet the mountain fronts. However, electrical resistivity soundings completed in the basin, coupled with the data from Driller's logs of a limited number of wells drilled in the basin indicates that the graben was probably step faulted before or as it was being filled will alluvium eroded off the surrounding mountains. The well presently being drilled in the Griffith well field (Sections 10 and 15, T19N, R18W.) encountered granitic bedrock at a depth of 1,580 feet and is believed to be on one of the step fault blocks.

The outlet of Golden Valley is a narrow throat at Yucca (Yucca Narrows) which is believed to be partially filled with a ridge of volcanic rocks, which at this time, appear to be non-water-bearing, covered by alluvial fill ranging in thickness from six hundred (600) feet to more than one thousand (1,000) feet.

The outlet from the Dutch Flat sub-basin of the Sacramento Valley is a narrow opening (Franconia Narrows) between Buck Mountain and the Black Mountains which extends westward past the Franconia railroad siding into the Colorado River Valley.

The estimated width of the basin aquifer based on the various data sets available appears to be:

Golden Valley	-	9 miles or 47,500 feet
Griffith Area	-	6 miles or 32,000 feet
Yucca Narrows	-	4 miles or 20,000 feet
Franconia Narrows	-	2.65 miles or 14,000 feet

Gillespie and Bentley (1971) estimated the areal extent of the Golden Valley aquifer to be 310 square miles.

Three water level maps have been published, Gillespie and Bentley (1971), Pfaff and Clay (1979) and Rascona (1991). Comparison of these three sets of data illustrates there were virtually no changes in the water levels or the slope of the water levels south of the Kingman - Oatman Road (the proposed area of withdrawal) during the period of recorded data, 1971 -1990. Water level measurements at Yucca in 1994 matched the published data. This data indicates that the aquifer is still in equilibrium at both the Yucca Narrows and the Franconia Narrows even though there has been withdrawal at the northern end of the Golden Valley sub-basin of the Sacramento Valley basin.

Calculating the subsurface outflow from the Golden Valley sub-basin at the Yucca Narrows and subtracting that calculated volume from the calculated volume of subsurface outflow of the Franconia Narrows (the total outflow of the Sacramento basin) allows the calculation of subsurface outflow from the Dutch Flat sub-basin. Because the water level maps indicate that the outflows of the sub-basins are in equilibrium, then the recharge to each sub-basin should equal the subsurface outflow of each sub-basin.

The subsurface outflows at the Yucca Narrows and the Franconia Narrows can be calculated by the formula:

$$v = TiL$$

where:

v = volume of flow in gallons per day
T = transmissivity in gpd/ft
I = slope of the water table in feet/foot
L = length of the cross - sectional area of flow in feet.

then:

using the characteristics of the Franconia Narrows:

T = 30,000 gpd/ft
I = 600 / 60,750 = 0.0099 feet per foot
L = 14,000 feet

and the characteristics of the Yucca Narrows:

T = 35,000 gpd/ft
I = 250 / 63,360 = 0.0039 feet per foot
L = 20,000 feet

gives a total subsurface outflow of the Sacramento Valley of 4,637 acre-feet per annum of which 3,058 acre-feet passes through the Yucca Narrows from the Golden Valley sub-basin and the remaining 1,579 acre-feet is derived from the Dutch Flat sub-basin.

The calculated total volume of subsurface outflow from the Sacramento basin based on Rascona's data is sixteen percent higher than the 4,000 acre-feet of subsurface outflow estimated by Gillespie and Bentley (1971). Thus, the revised calculation of subsurface outflow appears reasonable.

A total estimate of 7,000,000 acre-feet of water is stored in the Golden Valley aquifer (ADWR, 1994). The ADWR divides the stored water into two portions, that above 1,200 feet below the land surface (bls) and that below this arbitrary plane. The total available water in storage to 1,200 feet, as estimated by the ADWR, is approximately 2.3 million acre-feet. In the Golden Valley sub-basin, ADWR estimates that 800,000 acre-feet of this 2.3 million acre-feet is in storage in the aquifer underlying Golden Valley and 1.5 million acre-feet is in storage under the remainder of the sub-basin. This is summarized on **Table 4.2-3.**

The Arizona Department of Water Resources (1994 Staff Report) stated a 1990 demand of 1,258 acre-feet per annum in Golden Valley and projected a growing demand reaching 3,240 acre-feet per annum in the year 2040. One thousand acre-feet per annum of the amount is allotted to use by the Cyprus Mineral Mine leaching operation. However, the projected life of the demand for Cyprus Mineral Mine ends in the year 2005.

The maximum withdrawal (full time at the 3,300 gpm peak demand) for use by the Griffith Energy Project is 5,323 acre-feet per annum. This is assumed to start in the year 2000 and ends in the year 2040 for a total withdrawal of 212,920 acre-feet over the projected 40 year life of the plant. A more realistic withdrawal figure for the project is the average use of 3,064 acre-feet per annum (using the 1,900 gpm average demand) for a total withdrawal of 122,560 acre-feet over the projected 40 year life of the plant. However, as stated earlier, this analysis of the water balance uses the maximum figure of withdrawal, 212,920 acre-feet. The point of withdrawal for this 5,323 acre-feet per annum is in the middle of the Golden Valley sub-basin approximately 3 miles south of the Oatman Road (Old Route 66) in Sections 10 and 15, T19N, R18W.

The projected total withdrawal at the end of 40 years for the Golden Valley sub-basin is the Golden Valley projected use of 78,376 acre-feet plus the proposed withdrawal of 212,920 acre-feet by the Griffith Energy project for a total of 291,296 acre feet. The volume of water in storage above 1,200 feet bls is 2,300,000 acre feet, indicating that the aquifer would still retain a volume of 2,008,704 acre feet.

Assuming straight line population increases similar to the first 40 years over a 100-year period, and use by Griffith Energy would end, 1,823,554 acre feet would remain in the aquifer at 2100.

Table 4.2-4 summarizes the projected demand of the Golden Valley sub-basin.

Table 4.2-3
Water Stored in Aquifer in Acre-Feet
1999

Area	Total Volume in Storage	Volume in Storage Above 1,200 feet bls	Available Annual Supply for 100 Years When Lowering Water Level to 1,200 feet bls
Golden Valley[1]		800,000	8,000
Remainder of Basin[2]		1,500,000	15,000
Total Basin North of Yucca	7,000,000	2,300,000	23,000

Source: Arizona Department of Water Resources Staff Report, 1994.
1 Eight miles north and south of Highway 68 across the entire basin.
2 Eight miles south of Highway 68 to Yucca.

Table 4.2-4
Projected Demand in Acre-Feet
North of Yucca, Mohave County, Arizona

Area	1990	2000	2040	Total Projected 40 Year Use 2000 to 2040	2100	Total Projected 100 Year Use 2000 to 2100	Volume in Storage above 1,200 feet bls
Golden Valley[1]							
Domestic	279[2]	388	827	28,198	1,485	97,892	
Remainder of Basin[3]							
Domestic	560	730	1,407	50,178	2,424	165,634	
Total Domestic	839	1,118	2,234	78,376	3,309	263,526	800,000
Griffith Energy	0	5,3234	5,323	212,920	0	212,920	1,500,000
Total	**1,399**	**6,441**	**7,557**	**291,296**	**3,309**	**476,446**	**2,300,000**
Outflow at Yucca[5]	3,058	3,058	2,901		2,823		

1 Eight miles north and south of Highway 68 across the entire basin
2 Based on DES population projections to 2040, extended straight line
3 Eight miles south of Highway 68 to Yucca
4 Maximum withdrawal, continuous pumping for 40 years (2000 to 2040) at 3,300 gpm
5 Outflow equals recharge under equilibrium, limited change in storage

Projected Changes in the Water Levels

The program THWells[1] was utilized to estimate the drawdown caused by the water withdrawal from Golden Valley proposed by Griffith Energy. THWells calculates the drawdown or buildup of piezometric head based on discharge or recharge from wells. The calculation of total drawdown is based on the Theis and Hantush-Jacob equations for non-steady state flow in an isotropic, homogeneous aquifer of infinite areal extent under confined or leaky confined conditions respectively. The model can be used for unconfined (water-table conditions) aquifers when the calculated drawdowns in the model are less than half the saturated thickness of the aquifer. Boundary effects can be included through the use of image well theory. The resulting drawdowns are then superimposed on the existing water table.

Utilization of the THWells model to estimate the drawdown caused by withdrawal of ground water under unconfined (water table) conditions is applicable, as the projections for the demand of this project result in a drawdown of only 13 percent of the thickness of the saturated aquifer. Further, drawdowns resulting from ground water withdrawal have been projected for the worst case (maximum consumption) conditions to conservatively estimate the effect of withdrawal.

The rationale for the utilization of this relatively simple model for this preliminary estimate of drawdown caused by the projected withdrawal for the 40 year period, was that field data regarding the aquifer parameters in the Golden Valley sub-basin are currently very limited. However, there is sufficient data to develop a reasonable estimate. Consequently, the estimates generated for this analysis using the THWells model are as valid as estimates using the same assumed parameters on a more rigorous model.

For the purpose of this analysis, a constant withdrawal figure of 2,235 acre-feet per year (projected population of 20,998 in the year 2040 times 95 gpd/c) for a total withdrawal of 89,400 acre-feet over 40 years was used as the domestic demand for Golden Valley in the calculations. This demand for domestic water is conservative since it utilizes maximum withdrawal over the entire 40-year period.

The withdrawal projections utilized in the model run consisted of:

- Two wells withdrawing 1.995 million gallons per day (2,235 acre feet/year) in Golden Valley; and
- Six wells withdrawing 4.752 million gallons per day (5,323 acre feet/year) in the Griffith Energy well field.

The rationale for these rate of discharge was based on the average yield of wells in the basin. Should tests on the initial production well now being drilled prove that a different rate of yield can be sustained, then the projections can be modified.

The projected drawdowns at the end of 40 years of withdrawal would be 89 feet in the two wells in Golden Valley and 129 feet in the six wells in the Griffith well field. The drawdown would be

[1]THWells Version 4.01 by P.K.M. van de Heijde is distributed by the International Ground Water Modeling Center at the Colorado School of Mines.

43 feet at a radius of 2,000 feet from the wells in Golden Valley and 67 feet at a radius of 2,000 feet from the corner of the Griffith Energy well field.

The projected withdrawal from the aquifer of the Golden Valley sub-basin is 7,557 acre-feet per annum for 40 years. This withdrawal (Golden Valley plus Griffith Energy) exceeds the calculated recharge to the Golden Valley sub-basin by 4,499 acre-feet per annum because outflow will exceed inflow. This means that there will be a net water loss (water mining) during this period in Golden Valley.

After its projected 40-year life, the Griffith Energy Project will go off line dropping the withdrawal rate from the aquifer to 2,235 acre-feet per year and domestic use will continue to increase to 3,309 acre feet per year in the year 2100. Even after the withdrawal stops, the outflow from the Golden Valley sub-basin would continue to be affected in future years. The withdrawal pattern will cause a change in the slope of the water table in the Yucca Narrows from approximately 10 miles north of Yucca to approximately 8 miles south of Yucca (Rascona, 1991). This is graphed in **Figure 1**. The change in the slope of the water table and the calculated subsurface outflow of the Golden Valley sub-basin using the formula TiL previously defined gives:

Point in Time	Slope feet per foot	Calculated Outflow acre-feet per annum
Existing	0.0039	3,058
40 years	0.0037	2,901
100 years	0.0036	2,823

A decrease of 157 acre-feet per annum at the end of 40 years of withdrawal and an additional of 78 acre-feet per year in the following 60 years.

Potential Effects on Springs

Most of the springs and seeps issue from the igneous, metamorphic and volcanic rocks in the mountain areas surrounding the alluvial basin of Golden Valley. No springs are known to issue from the alluvium on the valley floors (Gillespie and Bentley, 1971). To feed the springs, the source for the springs must be upslope from their location. Therefore, changes in the water level in the alluvial valley fill cannot affect the sources of water feeding the springs.

Insert the following section after the paragraph on page 4-14:

4.2.5 Floodplain/Wetlands Statement of Findings

Western is required (10 CFR 1022.15) to provide a statement of findings concerning the impacts to floodplains and/or wetlands. The statement of findings is provided in response to the requirements of Executive Order 11988 – Floodplain Management (May 24, 1977) and Executive Order 11990 – Protection of Wetlands (May 24, 1977). Western is required to take into account the impacts of any activity on floodplains/wetlands during the normal planning process for that activity, such as NEPA. It is the policy of Western and the DOE to "...avoid to the extent possible long- and short-term adverse impacts associated with the destruction of wetlands and the occupancy and modification of floodplains and wetlands...."

The Draft EIS discusses the likely impacts of the proposed project on floodplains under Section 4.2.2.1.2, Surface Water, for the power plant and associated facilities, Section 4.2.1.2.2, Surface Water, for the transmission line components. The discussion for the transmission line alternative for Griffith-McConnico line, Segment E, is discussed under Section 4.2.1.2.2. No wetlands occur near the proposed Project components.

The proposed Plant, water well field and pipeline, and eastern gas pipeline are not located within or traverse 100-year floodplains. The proposed transmission line components and the northern gas pipeline and its alternative traverse floodplains. The new transmission line components would avoid impacts to floodplains because transmission structures would be designed to span the floodplains. In cases where a floodplain could not be spanned without the placement of a structure within the floodplain, Western would design the placement in accordance with applicable state and local floodplain protection standards. The proposed northern gas pipeline would be designed and constructed in accordance with applicable state and local floodplain protection standards. Disturbances within the floodplains traversed by this pipeline would be temporary. After installation of the pipeline, the ground would be restored to its original contour.

In accordance with 10 CFR 1022, Western believes that there is no practicable alternative to the proposed Project that would avoid impacts to the floodplains. Western further believes that the impacts to the floodplain are adequately considered. The standard mitigation measures presented in Table 2.1.4 of Chapter 2 of the Final EIS would be implemented to minimize potential harm to or within the floodplains.

4.3.2.1 Power Plant and Associated Facilities

Insert the following after fourth paragraph, page 4-16:

The Griffith Energy Plant would be equipped with several safety features and automatic shut-offs that would be triggered in the event of an equipment malfunction. In the event of such a shut down, the turbines would be shut off and the auxiliary boiler would be run to maintain needed temperatures. The emissions from the turbines would cease and overall emissions would be significantly reduced. Steam would be released through a safety valve to reduce pressure. No toxic or hazardous emissions would be released.

4.3.2.1.2 Air Quality Impacts

Insert the following paragraph in Section 4.3.2.1.2, Air Quality Impacts after the second paragraph, Page 4-18:

Formaldehyde, a by-product of incomplete combustion of natural gas, would be the only Hazardous Air Pollutant associated with the Griffith Project. Predicted ambient levels would be well within the guidelines established by the Arizona Department of Environmental Quality to protect the public health and safety (**Table 4.3-3**).

Replace Table 4.3-3 in the Draft EIS with the following which has been revised to include formaldehyde emissions data:

Table 4.3-3
Modeled Maximum Ambient Air Concentrations Within Analysis Area

Pollutant	Period	Source Modeled Concentration (Modeled Concentration with Contributing Sources) ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS (%)	Class II Increment ($\mu g/m^3$)	Percent of Class II Increments (%)
PM_{10}	Annual	1.62 (1.62)	50 (mean)	3.24 (3.24)	17 (mean)	9.53 (9.53)
SO_2	24 hr	17.56 (17.56)	150 (mean)	11.71 (11.71)	30 (max)	58.5 (58.5)
	24 hr	3.92 (4.14)	365 (max)	1.1 (1.1)	91 (max)	4.3 (4.5)
	3 hr	7.99 (20.14)	1300 (max)	0.6 (1.6)	512 (max)	1.56 (3.9)
CO	8 hr	100.40 (136.97)	1000 (max)	1.0 (6.4)	NA	NA
	1 hr	561.61 (1828.33)	4000 (max)	1.4 (4.6)	NA	NA
NO_2	Annual	10.42 (10.85)	100 (max)	10.4 (10.9)	25 (mean)	41.7 (43.4)
Formaldehyde	Annual	0.028	0.08[1]	35.0	NA	NA
	24 hr	0.515	12.0[1]	4.3	NA	NA
	1 hr	1.81	20.0[1]	9.0	NA	NA

[1] Arizona Ambient Air Quality Guidelines

4.3.2.1.3 Effects on Grand Canyon Regional Haze

Replace the three paragraphs on page 4-19 with the following:

As part of the PSD review process, the potential effect regional haze at the Grand Canyon was analyzed to determine if the Griffith Facility emissions would cause any significant effect on the standard visual range (SVR), defined as the distance at which a dark object can be clearly distinguished against a light background. The closest point to the grand Canyon from the Griffith Facility is 100 kilometers (60 miles). The effects on regional haze was evaluated using the output from the ISCST390 dispersion model and the methods outlines in the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase II Report, December, 1998, EPA Report EPA-454/R-98-019. Basically, the IWAQM method simulates the conversion of modeled NO_X and SO_2 to ammonium compounds, the pollutants that may lead to a reduction of SVR, and adds the contribution of particulates (PM_{10}) that may also contribute to a reduction of SVR.

The IWAQM method analyzes the effects of SVR reduction when compared to the days when the SVR is the highest, defined as the mean of the 20 percent best days. The IWAQM method also accounts for the contribution of relative humidity to SVR reduction. Essentially, higher relative humidity results in pollutant particles growing larger thereby increasing the reduction of SVR. The baseline data supplied by the National Park Service (NPS) for the Grand Canyon indicates the mean of the best 20 percent days is 245 kilometers associated with a mean relative humidity of 60 percent based on NPS mandated procedures.

The NPS recognizes an SVR reduction of more than five percent on more than one day as a significant regional haze impact at the Grand Canyon. The results of the IWAQM method using the ISCST390 model output data shows that the highest SVR reduction using the 18 months of on-site Griffith data would be 4.7 percent (based on modeling done prior to the issuance of the Draft EIS, the Draft EIS reported that the SVR may be reduced by more than 10 percent on 2 days of 545 analyzed). The modeling methods and results are contained in the air permit application that has been submitted to the Arizona Department of Environmental Quality (ADEQ).

Although the screening method demonstrated compliance with visibility standards for an 18-month period, the NPS requested regional haze at the Grand Canyon be evaluated using a more sophisticated model, CALPUFF/CALMET. This method requires the use of off-site data that is considered representative of the meteorological conditions of the site. The closest source of representative, off-site data with five years of data was Las Vegas, Nevada. A preliminary CALPUFF/CALMET model run using one year of data (1990) data showed the highest SVR reduction as 3.5 percent. Therefore, current modeling results show that the Griffith Project would not have significant effects on visibility at the Grand Canyon. Five years of data (1994 through 1998) are currently being modeled with CALPUFF/CALMET and the results will be included in the air permit application and considered by Western in its decision making.

4.3.2.1.4 Effects on Global Warming

Insert the following section after the last paragraph of Section 4.3.2.1.4, Effects on Global Warming, page 4-20:

4.3.2.1.5 Construction Emissions

During the 18-22 month construction period for the Griffith power plant, gaseous emissions (NO_x, CO, SO_2, and PM_{10}) would be generated in the exhaust of heavy construction equipment such as graders, excavators, dozers, scrapers, tractors, water trucks, tractors, and air compressors. Additionally, PM_{10} would be generated in fugitive dust emissions from earth clearing and grading, and vehicular traffic on the site. All of the construction-related emissions would be short-term for the duration of the construction. Fugitive dust impacts would be minimized by watering areas of soil disturbance and paving or graveling roads and parking areas as soon as practical after construction begins. Dust control procedures would be developed and submitted to Western for review and approval to ensure that these practices are implemented.

PM_{10} emissions can be estimated using an emission factor from the EPA document AP-42, Stationary Sources, Section 13.2.3. General construction activities would produce 1.2 tons/acre/month of total suspended particulates (TSP). The Griffith Facility would be

constructed on approximately a 65-acre area. Accordingly, the maximum monthly TSP emissions during the early phase of the project when most earth clearing would occur would be:

1.2 ton/acre/month * 65 acres = 78 tons/month or 217 pounds (lbs)/hour.

This emission factor represents the total particulates that would be generated by construction activities. Approximately 36 percent of TSP is PM_{10} . Therefore, the PM_{10} emissions would be 28 tons/month or 78 lbs/day. Furthermore, approximately 50 percent of the construction area would be disturbed by activities on any given day. As a result, PM_{10} emissions would be further reduced to 14 tons/month or 39 lbs/hour. The application of water or chemicals on exposed areas would reduce emissions another 50 percent. The resultant PM_{10} emissions would be 7 tons/month, 467 lbs/day, or 19 lbs/hour. This would be the emissions if construction activities would occur 24 hours per day. In reality, the maximum construction day would be 16 hours. Therefore, the most realistic daily rate would be 67 percent of 467 lbs or 313 lbs/day. This would be an emission rate of 13 lbs/hour (hr) averaged over the 24-hour period.

To assess the ambient air impacts from construction-related fugitive dust, the ISCST390 dispersion model was used with the construction area of 65 acres as an area source. Receptors were placed beyond the construction boundary every 100 meters out to one kilometer, then every 300 meters out to 1.5 kilometers. For input into the model, the emissions rate was calculated as:

(13 lbs/hr * 454 grams (gm)/lb * 1/3600 hours/second) / (65 acres * 4046 square meter (m^2)/acre

= 0.00000623 gm/sec/m^2.

The results of the modeling showed that the highest 24-hour average concentration off the construction site would be 126 micrograms per cubic meter ($\mu g/m^3$), a value 84 percent of the PM_{10} National Ambient Air Quality 24-hour Standard of 150 $\mu g/m^3$. The highest annual average concentration for the construction period would be 32 $\mu g/m^3$, a value 64 percent of the PM_{10} National Ambient Air Quality Annual Standard of 50 $\mu g/m^3$. These results represent the maximum impacts when the most earth-clearing and grading would occur initially. After the site has been prepared, foundations have been constructed, and roads graveled, the fugitive dust impacts would be considerably less.

During construction, vehicles would generate exhaust emissions. Table 4.3-5 summarizes the total anticipated CO, NO_X, PM_{10}, SO_2 and PM_{10} emissions that would be generated during construction. Emission factors were obtained from the EPA document AP-42, Emission Factors for Mobile Sources.

The total emissions per month were based on an assumed hourly vehicle use of 168 hours per month. The vehicle was assumed to operate 21 days per month and 8 hours per day. For a conservative estimate, construction equipment was assumed to operate 200 hours per month, and trucks were assumed to operate at either 100 or 150 hours per month.

The total annual emissions of 50.77 tons per year would be about five percent of Project emissions. Since the Project emissions have been demonstrated to not exceed National Ambient Air Quality Standards, it follows that construction-related project emissions would not cause any exceedances.

Table 4.3-5
Exhaust emissions From Construction Vehicles*

Vehicle Type	Operation	Emissions							
		Carbon Monoxide		Nitrogen Oxides		Sulfur Dioxide		Particulates PM_{10}	
	(hrs/mos)	lb/hr	tons/ month	lb/hr	tons/ month	lb/hr	tons/ month	lb/hr	tons/ month
Light & Medium Truck (gasoline)[a,b]	150	0.331	0.025	0.056	0.004	0.025	0.002	0.058	0.004
Heavy Truck (gasoline) [a,c]	100	0.730	1.655	0.098	0.005	0.005	0.003	0.128	0.006
Heavy Truck (off highway)	200	1.794	0.179	4.166	0.417	0.454	0.045	0.256	0.026
Light Tractor (track type)	200	0.346	0.035	1.26	0.13	0.137	0.014	0.112	0.011
Heavy Tractor (wheel type)	200	3.59	0.359	1.269	0.127	0.090	0.009	0.136	0.014
Cranes	200	0.675	0.068	1.691	0.169	0.143	0.014	0.139	0.014
Heavy Equipment (miscellaneous)[d]	200	0.675	0.068	1.691	0.69	0.143	0.014	0.139	0.014
TOTAL	**1,250**	**8.141**	**2.389**	**10.231**	**1.659**	**0.992**	**0.105**	**0.782**	**0.078**
TOTAL Emissions:	4.231 Tons Per Month; 50.77 Tons Per Year.								

* All vehicles are diesel powered, except as noted.
[a] For gasoline powered vehicles, emission rate (lb/h) is based on a gram per mile EPA emission factor and the speed shown under footnote [b] or [c].
[b] Assumes an average vehicle speed of 15 mph.
[c] Assumes an average vehicle speed of 10 mph.
[d] Includes trenchers, pavers, and compact loaders.

4.4.3.1 Alternate Gas Pipeline

Insert the following after Section 4.4.3.1, Alternate Gas Pipeline, Page 4-23:

4.4.3.1a Alternative Temporary Haul Route

Surface disturbances would be less than the proposed temporary off-loading area.

4.5.3.1 Alternate Gas Pipeline

Insert the following after Section 4.5.3.1, Alternate Gas Pipeline, Page 4-26:

4.5.3.1a Alternative Temporary Haul Route

Surface disturbances would be less than the proposed temporary off-loading area. State identified sensitive plant species would be salvaged prior to clearing for the road.

4.6.2.1 Power Plant and Associated Facilities

Page 4-28, paragraph 5 has been modified as follows:

Gila monster and rosy boa have a low potential for occurrence within the Plant area. Marginal habitat requirements for the Sonoran desert tortoise are met within the Plant area. Based on observations of lack of suitable habitat and existing land use conditions, populations of individuals of sensitive species are unlikely to occur within the Plant site. However, potential habitat for both the Sonoran desert tortoise and Gila monster is high on the eastern portion of the proposed pipeline corridor. The BLM has indicated that this area supports Category II desert tortoise habitat. In general, the habitats encountered within the Project Area are widely distributed in the region.

Add the following to the mitigation measures for wildlife:

- Griffith Energy will monitor and report on water quality and water fowl use of the brine disposal pond to detect any health or mortality problems that could develop over time. In the event that water fowl problems are observed, Griffith Energy will work with the AGFD to develop appropriate measures to mitigate them.

- Long-term habitat losses within areas of BLM designated desert tortoise habitat would be compensated for as a result of the Desert Tortoise Compensation Plan. The estimated acres required for complete tortoise compensation in both the Category II and III habitats would be less than 100 acres.

4.6.2.2.1 Griffith-Peacock 230-kV Line

The last sentence of paragraph 3, page 4-30 should read as follows:

Long-term habitat loss would be limited to tower locations, new access roads and access ways developed from periodic use for construction and maintenance of the transmission line.

Insert the following at the end of paragraph 4, page 4-30:

In addition, both the Gila monster and rosy boa may occur within these areas. The tortoise habitat compensation would also benefit both the rosy boa and Gila monster.

Insert the following at the end of paragraph 1, page 4-31:

Approximately 6 acres of disturbance would occur on BLM-administered lands. All of this would be reclaimed except for tower locations and access roads. In addition, areas not reclaimed would be compensated according to the Desert Tortoise Compensation Plan. Exact acreage of disturbance not reclaimed would be determined once construction is completed.

4.6.2.2.2 Griffith-McConnico 230-kV Line

Insert the following at the end of paragraph 3, page 4-31:

Approximately 8 acres of disturbance would occur on BLM-administered lands. All of this would be reclaimed except for tower locations and access roads. In addition, areas not reclaimed would be compensated according to the Desert Tortoise Compensation Plan. Exact acreage of disturbance not reclaimed will be determined once construction is completed.

4.6.3.1 Alternate Gas Pipeline

Insert the following after Section 4.6.3.1, Alternate Gas Pipeline, Page 4-32:

4.6.3.1a Alternative Temporary Haul Route

Potential impacts to desert tortoise individuals and habitat would be less than the proposed haul route because the temporary off-loading site would not need to be constructed. Impacts to other species and their habitat would lessened by the reduction in new disturbance from road construction.

4.7.1 Issues, Traditional Cultural Properties

Delete the second paragraph of page 4-35 and replace with following:

Traditional cultural information is confidential and sensitive. Tribal representatives are reluctant to divulge information about traditional localities. A lack of response to tribal notification should not be interpreted as a lack of concern or an indication that there are no sensitive localities within the Project area.

Studies have been initiated with the Hualapai and Navajo to identify sensitive areas. Although the Hualapai have not identified specific traditional resources or concerns within the area of immediate impact of the proposed Project, they expressed concern for nearby resources and for forgotten or unidentified resources. They particularly expressed concern about the possibility that construction and maintenance activities and the improvement of access may contribute to desecration and looting of nearby sensitive and traditional localities. They believe that the land and traditional places must be treated with respect and are concerned that outsiders may be ignorant or insensitive. In addition to the direct impacts of construction and tower placement, the Hualapai believe that transmission lines spanning over burials and sacred places are disrespectful and unacceptable. The fact that transmission lines or disturbance already exists in an area does not lessen the impact and disturbance of additional transmission lines. To the

extent possible, prehistoric and traditional cultural resources would be avoided by construction activities.

After the Areas of Potential Effect have been identified and staked, additional ethnographic interviews and field visits will be conducted to identify specific cultural resources, evaluate their significance and determine potential impacts. All Areas of Potential Effect will be inventoried for the presence of cultural and traditional resources prior to construction. Hualapai informants and representatives would accompany the archaeologist in the inventory of the Area of Potential Effect, or would be allowed to inventory the area independently to identify places of importance that may be impacted. Both direct impacts and indirect impacts to sensitive resources and their settings should be taken into consideration. In locations identified during inventory as having the potential to contain sensitive cultural resources, archaeologists and representatives of the Hualapai would be allowed to monitor right-of-way blading and construction activities in order to identify and protect any cultural resources uncovered by construction. In addition, if any unanticipated cultural resources or human remains are discovered during construction, Western's archaeologist would be contacted immediately. Western would notify the Hualapai Office of Cultural Resources and the archaeological consultant of any concerns and of any need for consultation.

4.7.3.1 Alternate Gas Pipeline

Insert the following after Section 4.7.3.1, Alternate Gas Pipeline, Page 4-38:

4.7.3.1a Alternative Temporary Haul Route

Surface disturbances would be less than the proposed temporary off-loading area, reducing the potential affect cultural resources.

4.8.2.2.1 Griffith-Peacock 230-kV Line (Segments A, B and C)

Replace the fourth paragraph in this section with the following:

Recreational use of public and private lands along the proposed transmission line, particularly Segments B and C, includes mountain biking, hiking, OHV use, and limited hunting. Impacts to these recreation opportunities are anticipated to be minimal and limited to the period of transmission line construction.

4.8.3.1 Alternate Gas Pipeline

Insert the following after Section 4.8.3.1, Alternate Gas Pipeline, Page 4-45:

4.8.3.1a Alternative Temporary Haul Route

BLM-managed public lands would not be affected by the construction and use of this alternative temporary access road.

4.9.2.1 Power Plant and Associated Facilities

Replace the last two sentences of the first paragraph, page 4-47 with the following:

The Plant site would be lit with partially- or fully- shielded light fixtures during periods of darkness limiting visual impact to residential areas of Golden Valley and the city of Kingman. The lighting would comply with Mohave County ordinances to minimize visual intrusion and to limit illumination of the night sky.

4.9.2.2 Transmission Lines

Insert the following paragraph after the seventh paragraph on Page 4-49 under Section 4.9.2.2, Transmission Lines:

Figure 4.9-4 through **4.9-8** each depict a simulation of transmission line facilities that would be visible from the KOPs 4, 5, 6 and 7, the locations of which are shown on **Figure 4.9-9**. None of the transmission line facilities would be visible from the three nearby wilderness areas. The proposed facilities are located at distances from the wilderness areas that preclude visibility.

Insert the following sentence at the end of the fourth paragraph in Section 4.9.2.2.1, Griffith Peacock 230-kV Line (Segments A, B and C), Page 4-50:

The proposed transmission line would be noticeable to viewers for a brief period of time before the traveler moves beyond the line of sight.

Insert the following after the second paragraph in Section 4.9.2.2.2, Griffith-McConnico 230-kV Line (Segment A and D), Page 4-51:

KOP 6 is at northbound I-40 at the proposed highway crossing of Segment A. The railroad adjacent to Segment D is visible at the right side of the photo. The KOP provides views of the proposed transmission line at the highway crossing and along the east side of the railroad. The 1,000 foot span of the crossing extends from a structure placed west of the south-bound lanes of I-40 to the structure on the east side of the railroad tracks. The transmission line in Segment A crosses the highway at an existing pipeline right-of-way, and dominates the foreground of the view from the KOP. The line would be obvious to travelers in both the north- and south-bound lanes of the highway. The line in segment D would also be obvious to travelers in both lanes but more so to travelers in the northbound lanes where the line would be nearer to the road. The transmission line would be an additive impact in that it would add to the existing man-made developments seen from the highway.

A portion of Segment D is located on BLM lands that have been classified as VRM Class IV which allows for alterations to be obvious to the viewer. The line in this segment would be obvious but would be subordinate to the landscape because it would be backdropped by the Hualapai Mountains from most view angles.

KOP 7 looks east from Route 66 near the west side of the Walnut Creek Estates subdivision. The KOP provides a view of the proposed transmission line in proposed Segment D along I-40, located approximately 0.7 miles east of the KOP. The line crosses from right to left across the

middle of the photo. Vegetation and buildings block views of several of the structures. The transmission line at this distance would be visible, but would be a barely noticeable addition to the landscape as viewed from the KOP.

4.9.3.2 Alternative Transmission Lines

4.9.3.2.1 Griffith-Peacock 230-kV Line (Segments B and C)

Segments B would be on BLM lands managed under VRM Classes II, III and IV. VRM Class II areas are managed to retain the visual character of the landscape. VRM Class III areas are managed to partially retain the existing character of the landscape. All of Segment B would be constructed adjacent to an existing transmission line utilizing a single pole structure. Segment B would utilize the ROW acquired by Citizen's Utilities for the Kingman-Havasu transmission line project. In granting the ROW, BLM stipulated the use of dulled single pole structures where the Kingman-Havasu line crossed BLM-managed public lands.

Most of the proposed line in Segment B is in a VRM Class III area. Both the proposed and existing ROW crosses through public and private lands isolated by the terrain from nearby transportation routes, residential, and industrial-use areas, and are accessible primarily by 4-wheel drive roads. The rugged terrain would screen the transmission line from views of residents and from travelers on highways and local roads. The additive impact of the additional line in Segment B would not be visible to most of these viewers. The existing rural landscape would be retained. The transmission line would comply with BLM objectives for Class III areas because modifications would not be visible to viewers of the landscape.

Approximately 1.0 mile of Segment B of the alternative would cross BLM lands managed with VRM Class II objectives. Class II objectives are to provide for management activities that may contrast with the basic landscape elements, but remain subordinate to the existing landscape character. Activities may be visually evident, but should not be dominant. The transmission line on BLM lands in Segment B would be obvious to viewers from residences near the Hilltop Substation. This portion of the transmission line would not comply with BLM objectives for VRM Class II, but the impacts would be reduced because of the presence of the existing line.

The remainder of the segment on BLM lands is in a VRM Class IV area. Most of the VRM Class IV BLM lands along the segment are accessible only by lightly traveled 4-wheel drive roads, and are rarely seen by potential viewers. A portion of the transmission line is on BLM lands east of I-40, and would be visible to travelers on the highway. The introduction of the transmission line on BLM lands adjacent to the highway would be obvious to travelers on the highway for a short period of time. However, the addition of the line to the landscape would not change the existing industrial-rural character of the landscape. The transmission line would comply with BLM objectives for VRM Class IV, because the line would remain subordinate to the existing landscape character.

All of the proposed Segment C is within a VRM Class IV area. Portions of the additional transmission line in Segment C would be obvious to viewers on I-40 and local roads. The existing line is a minor element of the landscape and the additive impact of the proposed line would not substantially increase the impact because of the short periods of time the lines would be visible to travelers on the highway. BLM objectives for visual resource management in

Class IV areas would be met because the additive impact of one adjacent line would remain subordinate to the existing landscape character.

Figure 4.9-4a depicts a simulation of the alternative structure type in proposed Segment C that would be visible from KOP 4. The KOP represents a viewpoint from I-40, the primary transportation route through Mohave County. The KOP is located about 0.3 miles east of the existing transmission line crossing of I-40 east of Kingman. The proposed 230-kV line would be adjacent to the existing line. The proposed and existing lines are in the foreground as viewed from the highway. Foothills to the north and south of the highway would block the transmission line from views of the middleground and background distance zones. The proposed transmission line in the foreground zone would be noticeable to travelers on the highway, but is not a dominant or intrusive element in the characteristic rural landscape.

4.11.3.1 Alternate Gas Pipeline

Insert the following section after Section 4.11.3.1 Alternate Gas Pipeline, Page 4-62:

4.11.3.1a Alternative Temporary Haul Route

Impacts to vehicular traffic from implementation of this alternative would be the intermittent increase in heavy truck traffic on the I-40 frontage road, the Oatman Road/I-40 interchange, and I-40 south of the interchange to the temporary access road to the Plant site. In addition, some delays in I-40 traffic northbound would occur with haul traffic carrying over-sized loads using I-40 northbound from the interchange to the first median crossover, where the heavy haul truck/trailer would conduct a U-turn and proceed south to the temporary access road turnoff. Use of I-40 northbound would occur only for those loads of equipment too large to fit safely under the Oatman Road overpass. All other loads would pass under the overpass and enter I-40 southbound using the access ramp from Oatman Road to the temporary access road turnoff. Minor traffic delays, most likely at night, would occur as these would be slow-moving vehicles and the wide loads could limit the ability for southbound vehicles to pass.

4.13.2 Proposed Action

Insert the following after the third paragraph under Occupational Safety and Health, page 4-66:

The occupational safety and health program for Griffith Energy Plant does not need to include an emergency evacuation plan in case of an accidental release of toxic gases at the nearby Praxair facility. The emergency response plan developed for the Praxair facility identifies an evacuation zone limited to the Praxair facility's property boundary in the event of an accident. This is because of the small amounts of gases produced at the facility and the dilution that would occur with the atmosphere if released, reducing the concentration of the gas to non-toxic levels.

4.16 Cumulative Impacts

Insert after the first full paragraph, page 4-92:

The numbers for current Texas and US gas reserves were provided in Section 4.1.2.1 of the Draft EIS as a point of reference for the general availability of the resource that would be used by

the Griffith Energy Project. Using the numbers provided, if operated for 50 years, the Griffith Energy Plant could use almost 1 percent of the currently (1998) proven and reported US dry natural gas reserves. The current reserve estimates in the Draft EIS do not include Canadian and Central American reserves that are also available to US consumers. Nor does it include the billions of cubic feet of new North American reserves that are added annually through continued exploration and development of natural gas resources. The Gas Research Institute projects an increase of 18,128 billion cubic feet of North American reserves between 2000 and 2005. Therefore, development of this project and others such as Southpoint Power Project are not expected to have a significant impact on the availability of natural gas for other uses. Further, the gas suppliers' ability to contract for the delivery of the gas for this and other projects would be limited by their ability to supply it.

Table 4.18-1

Revise the Geologic/Mineralogical row in the table as follows:

Resource	*Type of Commitment/Reason for Commitment*	*Irreversible*	*Irretrievable*
Geological/Mineralogical	- Consumptive use of methane	no	yes

CHAPTER SIX

Insert the following:

Sec. 3.1 - Page 3-2 - Geologic Hazards - The Arizona Earthquake Information Center at Northern Arizona University has published Earthquake Hazard Evaluation Mohave County Arizona - July 30, 1997.

FERC. 1996. Final Environmental Impact Statement. Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities (Docket No. RM95-8-000) and Recovery of Stranded Costs by Public Utilities and Transmitting Utilities (Docket No. RM94-7-001).

Western. 1998. Notice of Final Open Access Transmission Service Tariff. 63 FR 521.

CORRECTIONS

Section	Page	Paragraph/ Table	Column/Row/ Line	Correction
2.1.1.1 Power Plant	2-2	Paragraph 3	Line 3	Change 130 to 155.
2.1.2.7 Standard Mitigation	2-23	Table 2.1-4, #8	Column 1	Delete "on the habitat for sensitive status plant species." and replace with "in habitat for sensitive - and special-status species"
2.5 Comparison of Alternatives	2-31	Environmental Consequences Table	All	Replace the table with the Environmental Consequences Table from the Final EIS Summary.
3.1 Geologic Hazards	3-2	Paragraph 2	Line 4 & Line 7	Delete "of magnitude" and replace with "within the range of magnitude"
3.3.2 Air Quality	3-18	Paragraph 1	Line 2	Delete ")" after word "typically"
3.3.2 Air Quality	3-18	Paragraph 2	Line 3	Insert "The highest 24-hour concentration of PM_{10} was 64.7 $\mu g/m^3$." after "12.0 $\mu g/m^3$." and before "The"
3.4.2.2 Segment B	3-20	Paragraph 1	Line 3	Delete "Revegetation of these soils is limited by the excessive coarse fragments within their profiles"
3.4.2.3 Segment C	3-20	Paragraph 5	Line 6	Delete "Revegetation of these soils is limited by the excessive coarse fragments within their profiles"
3.4.2.6 Segment Z	3-21	Paragraph 2	Line 6	Delete "Revegetation of these soils is difficult because of the excessive coarse fragments within their profiles"
3.4.2.6 Segment Z	3-21	Paragraph 3	Line 5	Delete "Revegetation of these soils is difficult because of the excessive coarse fragments within their profiles"
3.4.2.6 Segment Z	3-21	Paragraph 4	Line 6	Delete "Revegetation of these soils is difficult because of the excessive coarse fragments within their profiles"
3.5 Vegetation	3-23	Table 3.5-1	Column 3, Semidesert-Mixed Grass Row, Line 2	Delete "Tobosa" and replace with "Galleta"

CORRECTIONS

Section	Page	Paragraph/ Table	Column/Row/ Line	Correction
3.6 Wildlife	3-28	Paragraph 5	Lines 4 and 5	Delete: antelope jackrabbit *(Lepus alleni)*, and mesquite mouse (*Peromyscus merriami*)
3.6 Wildlife	3-28	Paragraph 5	Line 5	Delete "mesquite mouse (*Peromyscus merriami*)" and replace with "cactus mouse (*Peromyscus eremicus*)"
3.6 Wildlife	3-28	Paragraph 5	Line 7	Delete "desert kangaroo rat (*Dipodomys deserti*)" and replace with Merriam's kangaroo rat (*Dipodomys merriami*)"
3.6 Wildlife	3-29	Paragraph 1	Line 3	Delete: Harris hawk *(Parabuteo unicinctus)*
3.6 Wildlife	3-29	Paragraph 3		Insert at the end of 3rd paragraph "Other species of special concern are : *Myotis velifer, Macrotus californicus, Eumops perotis, Idionycteris phyllotis, and Corynorhinus townsendii*"
3.6 Wildlife	3-29	Paragraph 4	Line 1	Delete "Mojave population" and replace with "listed desert tortoise population"
3.6 Wildlife	3-29	Paragraph 4	Line 3	Insert "and unlisted" after "distinct" and before "population"
3.6 Wildlife	3-29	Paragraph 4	Line 3	Insert ", known as the Sonoran desert tortoise," after "tortoise" and before "has"
3.6 Wildlife	3-29	Paragraph 4	Line 4	Delete "The USFWS has designated critical habitat in Arizona for the Mojave tortoise"
3.6 Wildlife	3-29	Paragraph 4	Line 6	Delete "The designated critical habitat is more than 50 air miles north of the proposed Segment Z"
3.6 Wildlife	3-32	Paragraph 2	Line 4	Delete "may" and replace with "does"

Section	Page	Paragraph/ Table	Column/Row/ Line	Correction
3.6 Wildlife	3-32	Paragraph 3	Line 4	Delete "This bat is not expected to occur within the proposed Project area because of lack of suitable habitat." and replace with "This bat is likely present in the Black Mountains portion of the Project area; a known roost is located within 0.5 mile of Segment Z in the Black Mountains"
3.6 Wildlife	3-32	Paragraph 4	Heading	Insert "BLM and" before "AGFD"
3.6.2.1 Segment A	3-33	Paragraph 6	Line 3	Insert after "site" and before the period "(Figures 2.1-4a and 3.5-1a)"
3.6.2.2 Segment B	3-34	Paragraph 2	Line 2	Insert after "length" and before the period "(Figure 2.1-4a)"
3.6.2.3 Segment C	3-34	Paragraph 5	Line 1	Insert after "Substation" and before the period "(Figure 2.1-4a)"
3.6.2.4 Segment D	3-35	Paragraph 1	Line 2	Insert after "line" and before the period "(Figure 2.1-4a)"
3.6.2.5 Segment E	3-35	Paragraph 3	Line 3	Insert after "Segment A" and before the period "(Figure 2.1-4a)"
3.6.2.6 Segment Z	3-35	Paragraph 4	Line 1	Insert after "habitats" and before the period "Figure 2.1-4a)"
3.8 Land Use	3-46	Paragraph 1	Line 3	Delete "off-road vehicle (ORV)" and replace with "Off-Highway Vehicle (OHV)"
3.8.2.6 Segment Z	3-51	Paragraph 5	Line 1	Delete "5" and replace with "7"
3.9.1 Power Plant and Associated Facilities	3-52	Paragraph 4	Line 3	Delete "ORV" and replace with "OHV"
3.9.2.2 Segment B, 3.9.2.3 Segment C, 3.9.2.4 Segment D, 3.9.2.5 Segment E	3-53	Paragraphs 1, 5, 8, & 10	Lines 2&3, Lines, 2&3, Line 2, Line 3	Delete "ORV" and replace with "OHV"

Section	Page	Paragraph/ Table	Column/Row/ Line	Correction
3.9.2.5 Segment E	3-53	Paragraph 10	Line 4	Delete "is limited" and replace with "is limited"
3.10.1 Power Plant and Associated Facilities	3-55	Paragraph 2	Line 1	Delete "The BLM manages visual resources on their lands in the area using their Visual Resource Management (VRM) system." and replace with "The BLM manages visual resources on their lands in the area using their Visual Resource Management (VRM) system, as shown on Figure 3.10-1"
3.10.2.3 Segment C	3-56	Paragraph 1	Line 7	Replace "Class III." with "Class IV."
3.10.2.6 Segment Z	3-58	Paragraph 2	Line 1	Delete the sentence "The Black Mountains West scenic overlook is located on SR 68 in T.23N., R. 17W., Sec. 15
3.11 Socioeconomics	3-61	Paragraph 4	Line 2	Delete "Los Vegas" and replace with "Las Vegas"
4.2.2.1.1 Groundwater	4-8	Paragraph 5	Line 1	Insert "by" after "affected" and before "potential"
4.3.2.1.1 Regulatory Status/Project Emissions	4-17	Paragraph 1	Line 3	Insert "The PM_{10} emissions include both the particulate emissions from the stacks and the cooling towers." after the sentence that ends "...CO to 17 ppm"
4.3.2.1.2 Air Quality Impacts	4-18	Paragraph 1	Line 6	Change 130 to 155
4.6.1 Issues	4-27	Paragraph 1	Line 4	Insert after "species" "and other special status species"
4.6.2.1 Power Plant and Associated Facilities	4-28	Paragraph 4	Line 5	Insert "BLM and" before "AGFD"
4.6.2.2 Transmission Lines	4-29	Paragraph 8	Line 4	Delete "and voles"

Section	Page	Paragraph/ Table	Column/Row/ Line	Correction
4.6.2.2.2 Griffith-McConnico 230-kV Line	4-31	Paragraph 3	Line 3	Change "power" to "tower"
4.6.2.2.3 Griffith-McConnico 230-kV Line	4-31	Paragraph 7	Line 1	Insert "Sonoran desert tortoise," between "mountain plover" and "rosy boa"
4.6.3.2 Alternative Pipeline	4-32	Paragraph 4	Heading	Delete "4.6.3.2 Alternative Pipeline" and replace with "4.6.3.2 Alternative Transmission Line"
4.8.2.2 Transmission Lines	4-41	Paragraph 3	Line 4	Delete "ORV" and replace with "OHV"
4.8.2.2.1 Griffith-Peacock 230-kV Line (Segments A, B and C)	4-43	Paragraph 6	Line 2	Delete "ORV" and replace with "OHV"
4.8.2.2.2 Griffith-McConnico 230-kV Line (Segments A and D)	4-44	Paragraph 4	Line 1	Delete "no significant" and replace with "minimal"
4.13.2 Proposed Action	4-68	Paragraph 1	Line 8	Delete "responding fire departments" and replace with "Mohave County"

Section	Page	Paragraph/ Table	Column/Row/ Line	Correction
4.18 Irreversible and Irretrievable Commitment of Resources	4-94	Table 4.18-1	Row 7, Columns 2, 3 & 4	Delete "None (see construction materials below)" and insert "Consumption of methane, no and yes"
4.18 Irreversible and Irretrievable Commitment of Resources	4-95	Table 4.18-1	Column 2, Row 1, Line 3	Delete "ORV" and replace with "OHV"

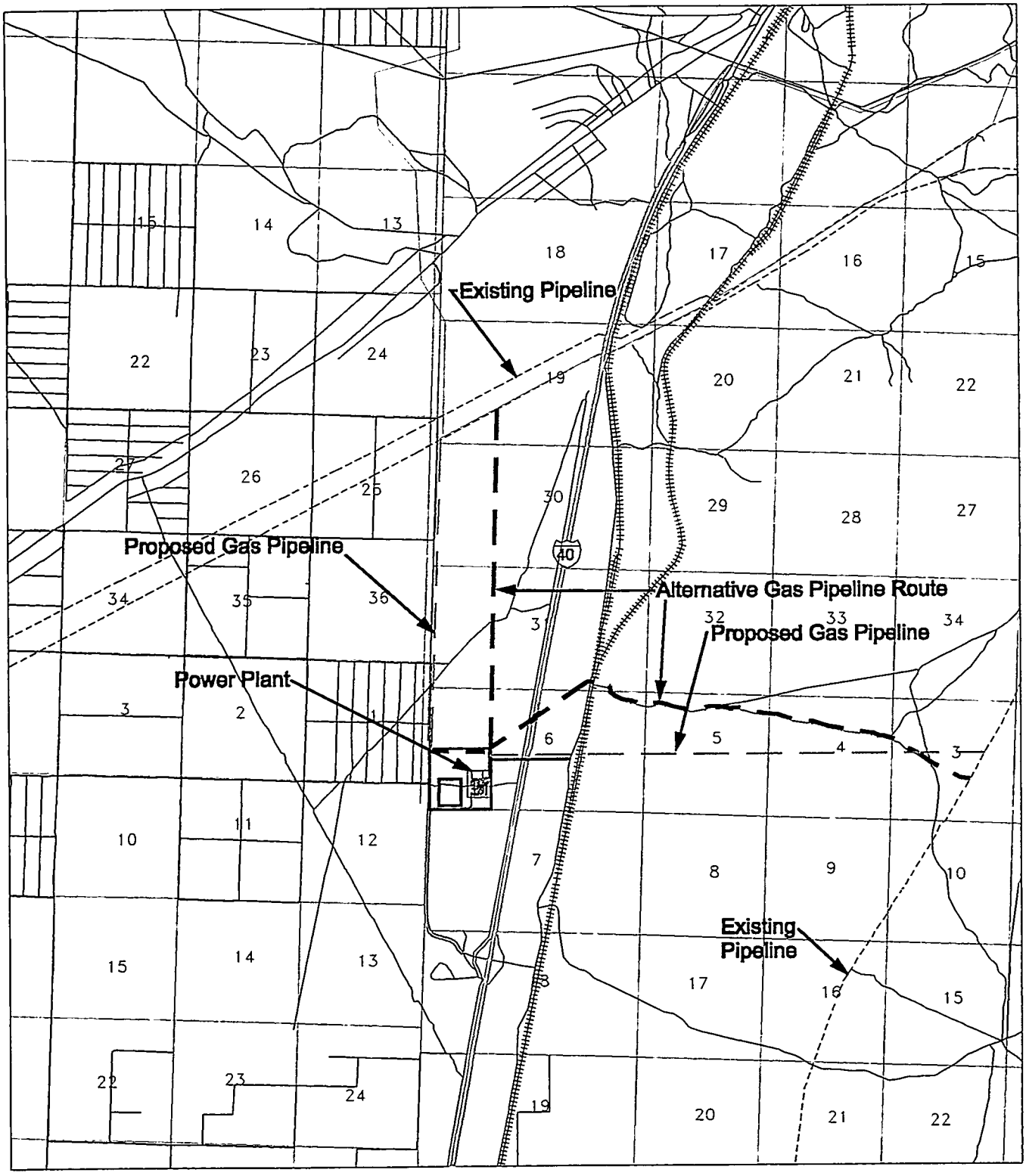

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Figure 2.2-1
Location of Alternative Pipeline Routes

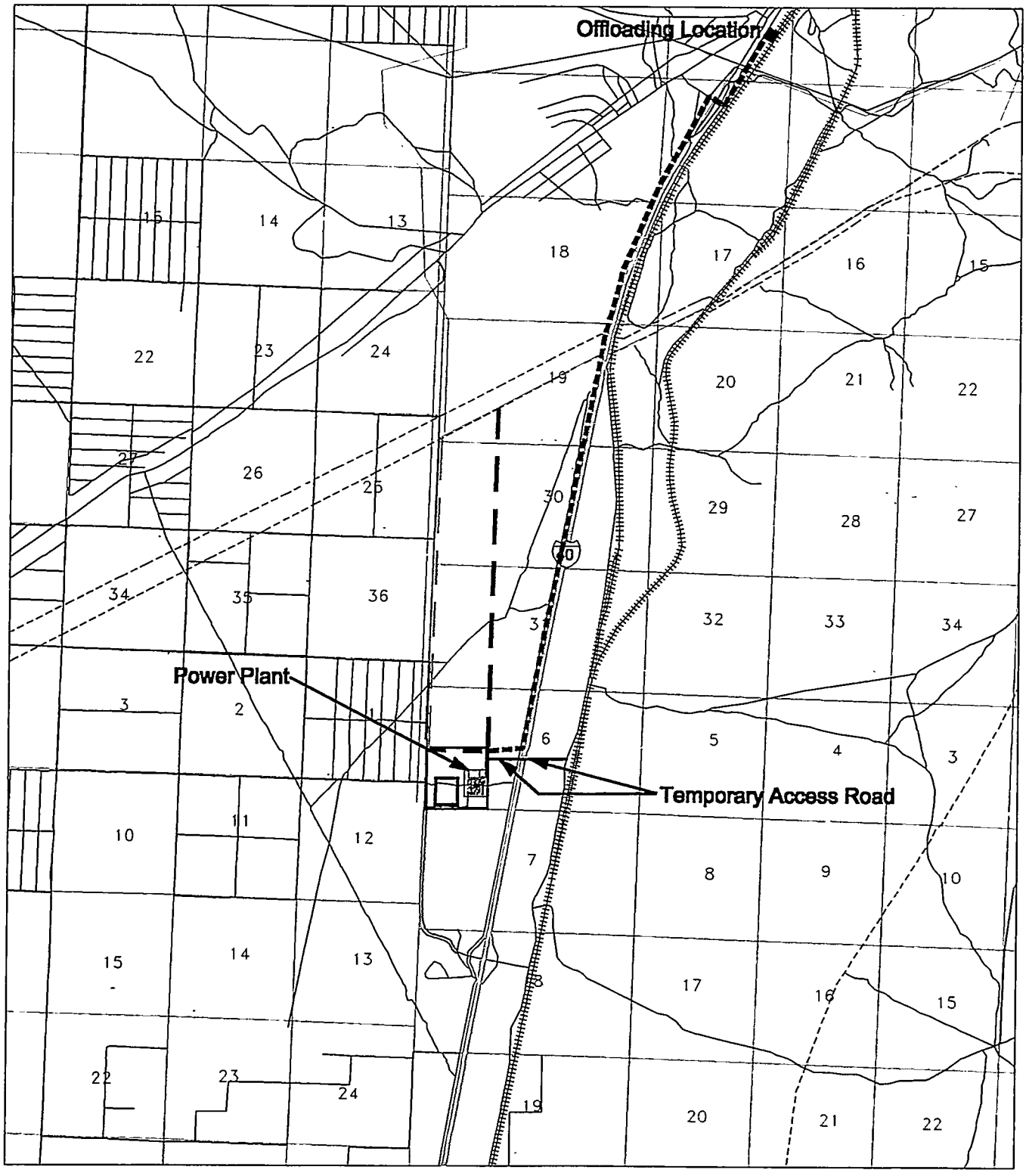
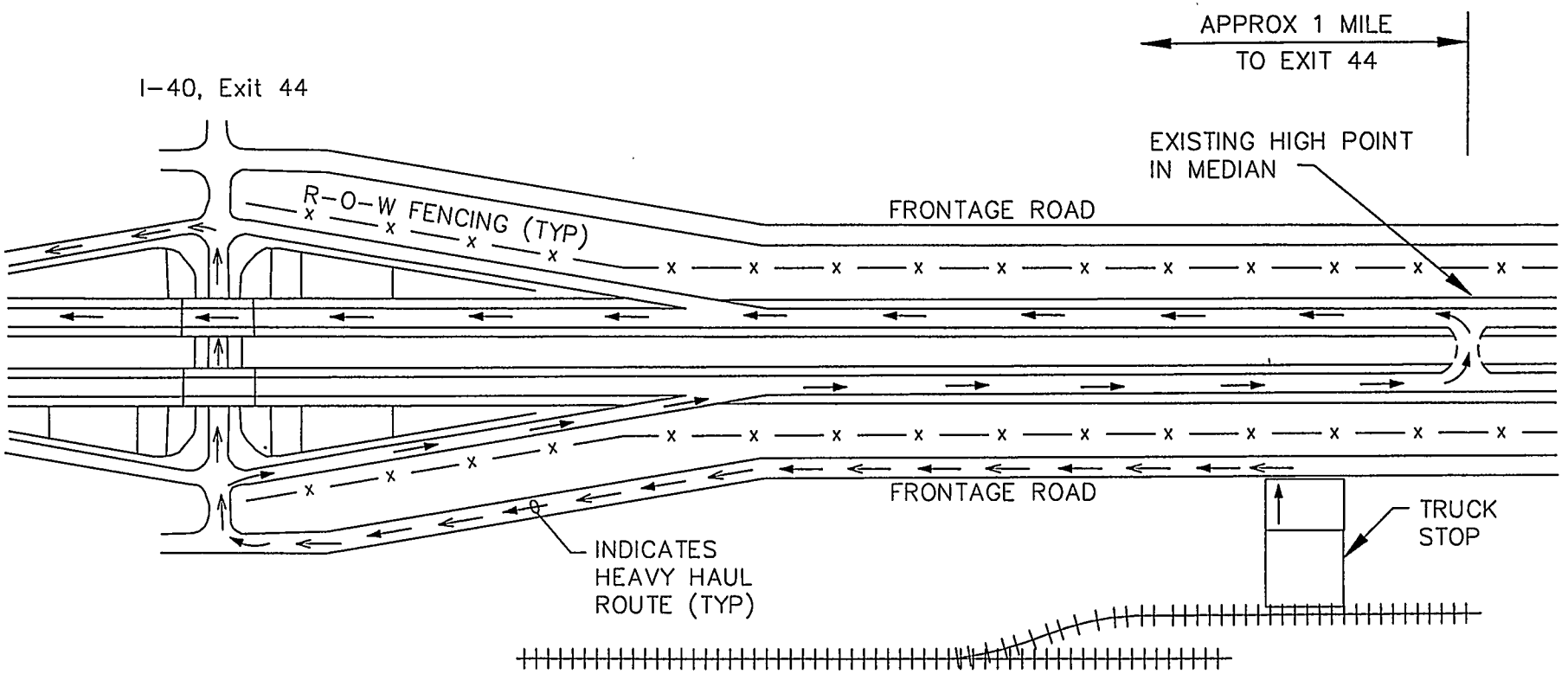


Figure 2.2-1a
Location of Alternative Equipment Haul Route



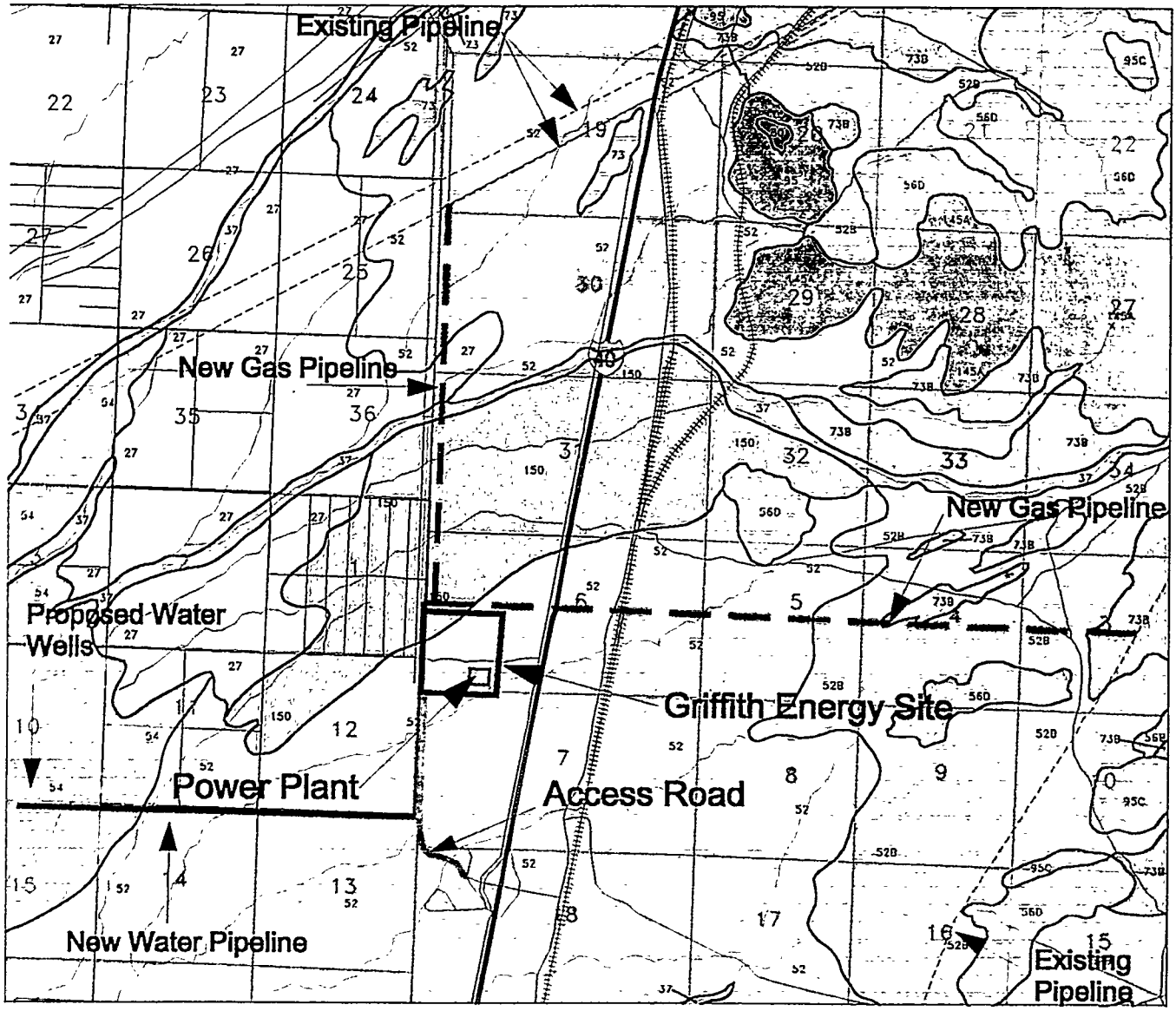
LEGEND

→ Haul route for equipment small enough to pass through the I-40 underpass

→ Haul Route for equipment too large to pass through the I-40 underpass

\681\report-eis\fig2.2-1b.dwg

Figure 2.2-1b
Details of I-40 Access for Heavy Equipment Haul Route



LEGEND

- Proposed Gas Pipeline
- Railroad
- Existing Gas Pipeline
- Soil boundary Line

Soil Mapping Units and ID Numbers

27	Poachie very gravelly loam, dry, 1 to 4 percent slopes.
37	Artzo-Franconia-Riverwash complex, dry, 1 to 3 percent slopes.
52	Castaneda extremely gravelly loam, dry, 1 to 7 percent slopes.
52B	Castaneda extremely gravelly loam, 1 to 7 percent slopes.
54B	Orwash sandy loam, dry, 1 to 3 percent slopes.
56D	Wikieup-Rock outcrop complex, 20 to 60 percent slopes.
73	Goodsprings gravelly sandy loam, dry, 1 to 15 percent slopes.
73B	Goodsprings gravelly sandy loam, 1 to 15 percent slopes.
80	Tumarion very cobbly loam, dry, 2 to 15 percent slopes.
95	Razorback- Rock outcrop-Rubble land complex, dry, 40 to 70 percent slopes.
95C	Razorback- Rock outcrop-Rubble land complex, 40 to 70 percent slopes.
145A	Razorback- Rock outcrop complex, 15 to 70 percent slopes.
150	Mohon-Poachie complex, dry, 2 to 15 percent slopes.

Source: USDA NRCS 1998b.

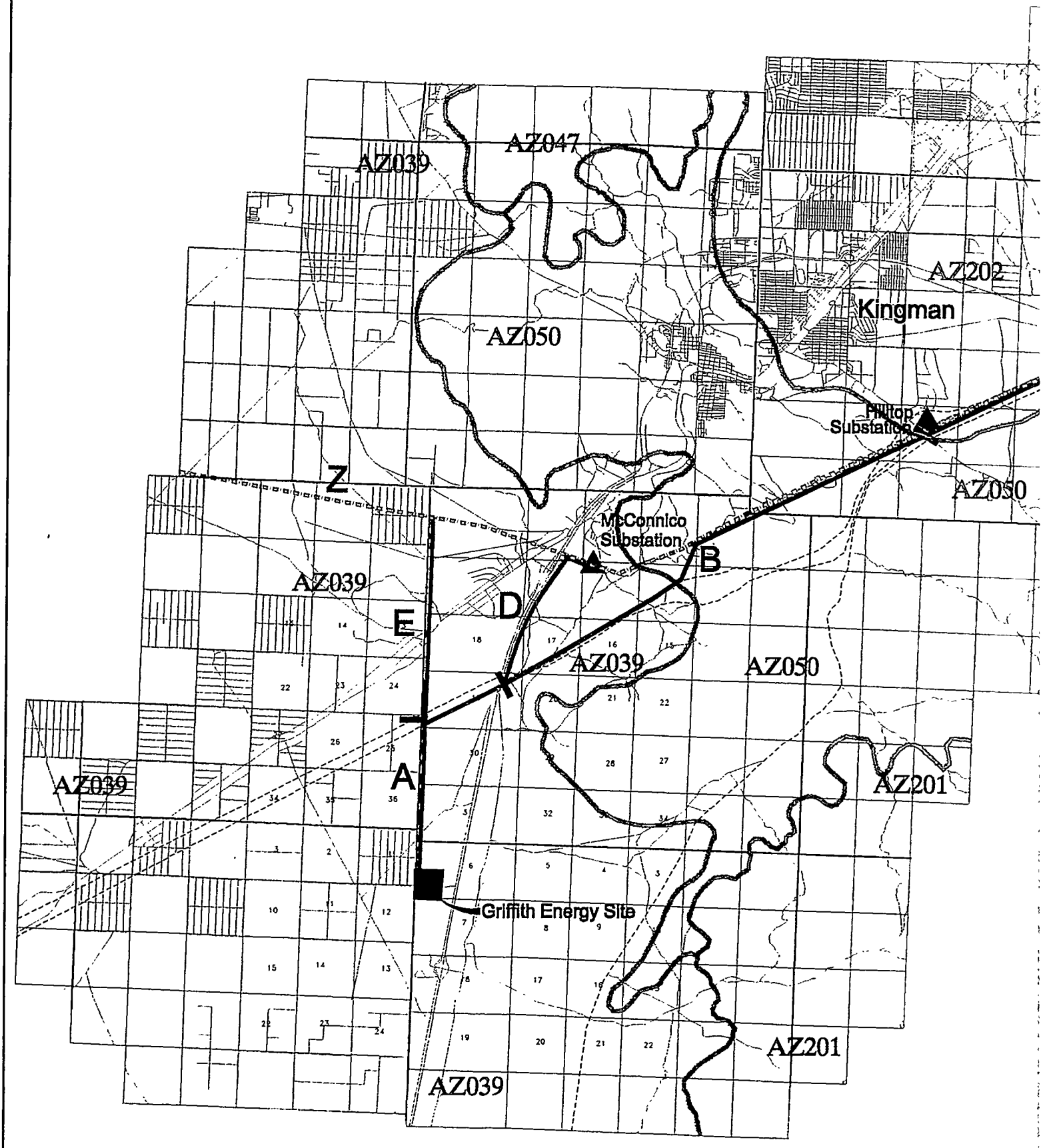
N

0 1 2

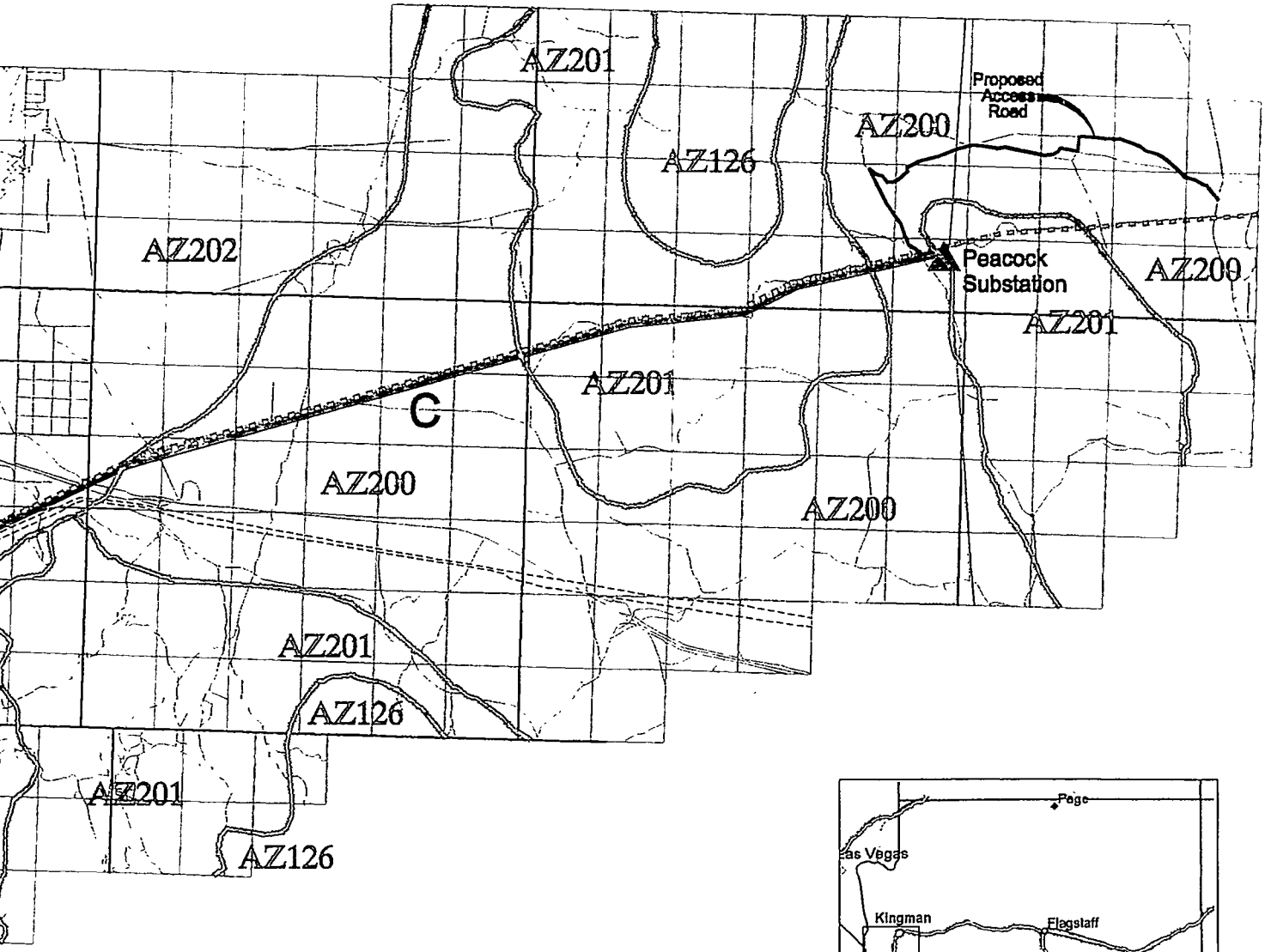
Scale in Miles

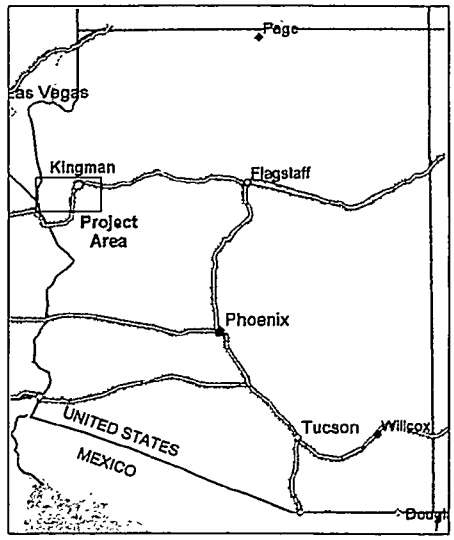
Figure 3.4-1
Plant Vicinity Soils Map

\681\report-eis\fig3.4-1.dwg



\681\report-eis\fig3.4-2.dwg





Legend

- Existing 230kV Line
- Proposed 230kV Line
- Proposed Access Road
- Soil Boundary Line
- Proposed Substation
- Existing Substation
- AZ123 Soil Association ID Number

Soils ID Number Legend

AZ039: Cacique-Bucklebar-Alko
AZ047: Lehmans-Tumarion-Akela
AZ050: Cellar-Granolite-Rock Outcrop
AZ126: Virgin Peak-Hualapai-Rock Outcrop
AZ200: Continetal-Rillino-Gila
AZ201: Romero-Rock Outcrop- Tombstone
AZ202: Bucklebar-Hayhook-Augustine

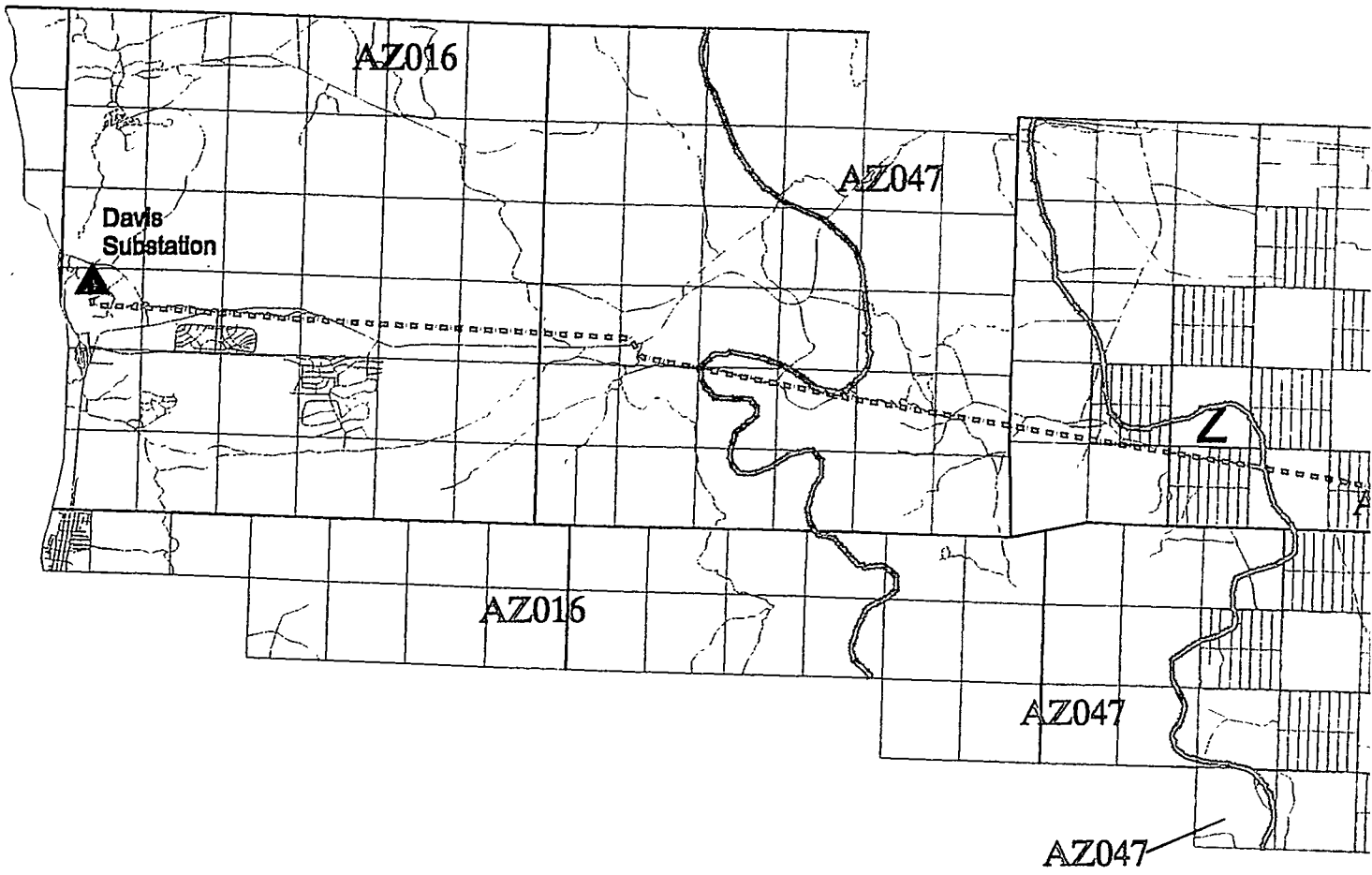
Source: USDA NRCS 1998a.

N

0 2 4

Scale (mi)

Figure 3.4-2
General Soils Map
Power Plant and
Eastern Transmission Line Routes



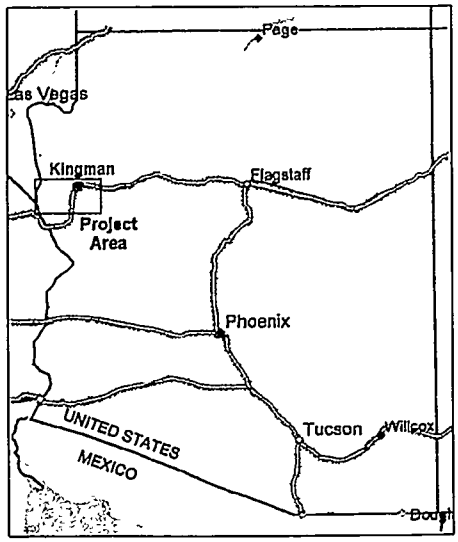
Legend

- Existing 230kV Line
- Proposed 230kV Line
- Soils Boundary Line
- Existing Substation
- AZ123 Soil Association ID Number

Soils ID Number Legend

AZ016: Gunsight-Rillito-Chuckawalla
AZ039: Cacique-Bucklebar-Alko
AZ047: Lehmans-Tumarion-Akela
AZ050: Cellar-Granolite-Rock Outcrop
AZ201: Remero-Rock Outcrop-Tombsto
AZ202: Bucklebar-Hayhook-Augustine

Source: USDA NRCS 1998a.



\681\report-eis\fig3.4-3.dwg

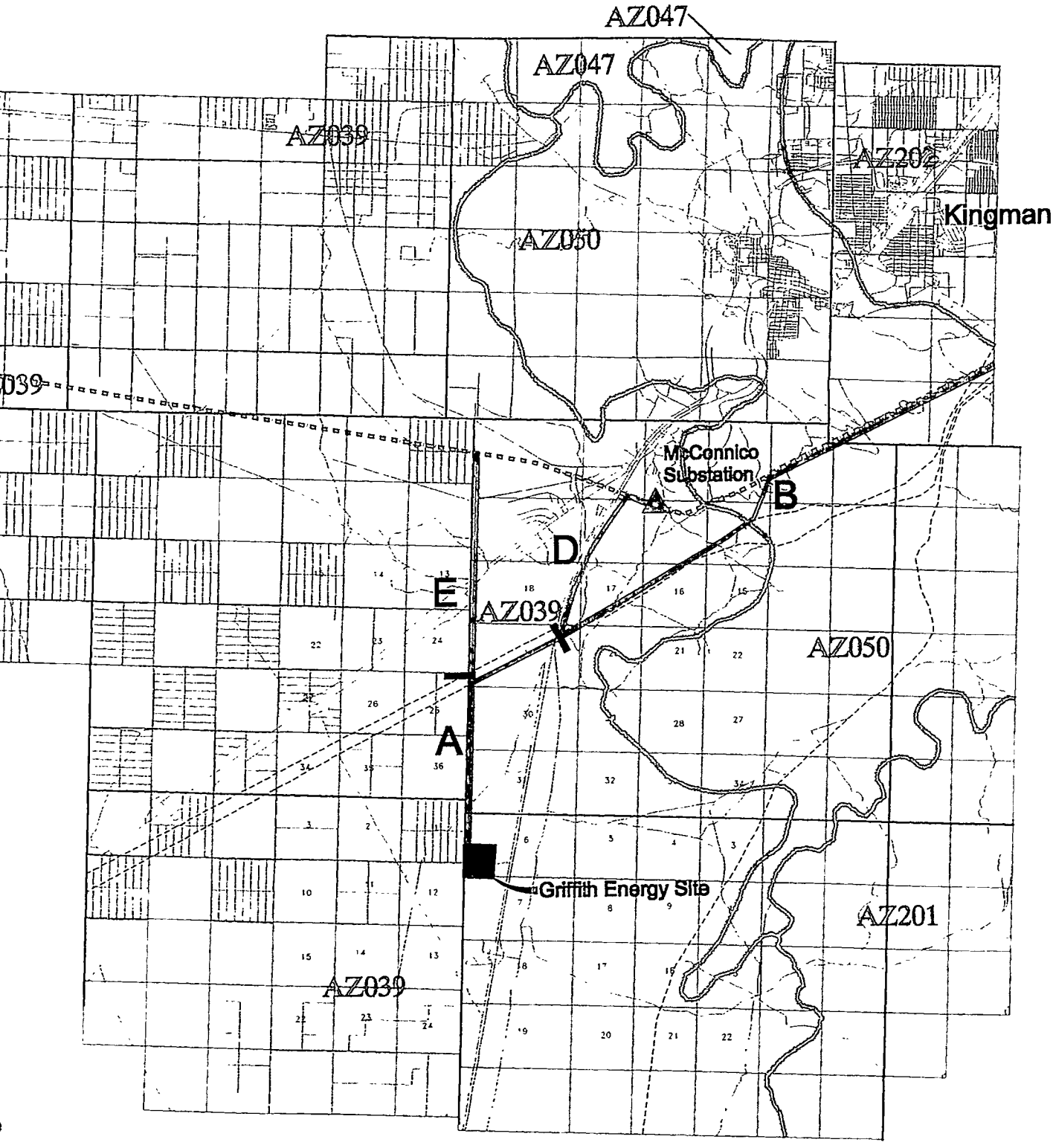
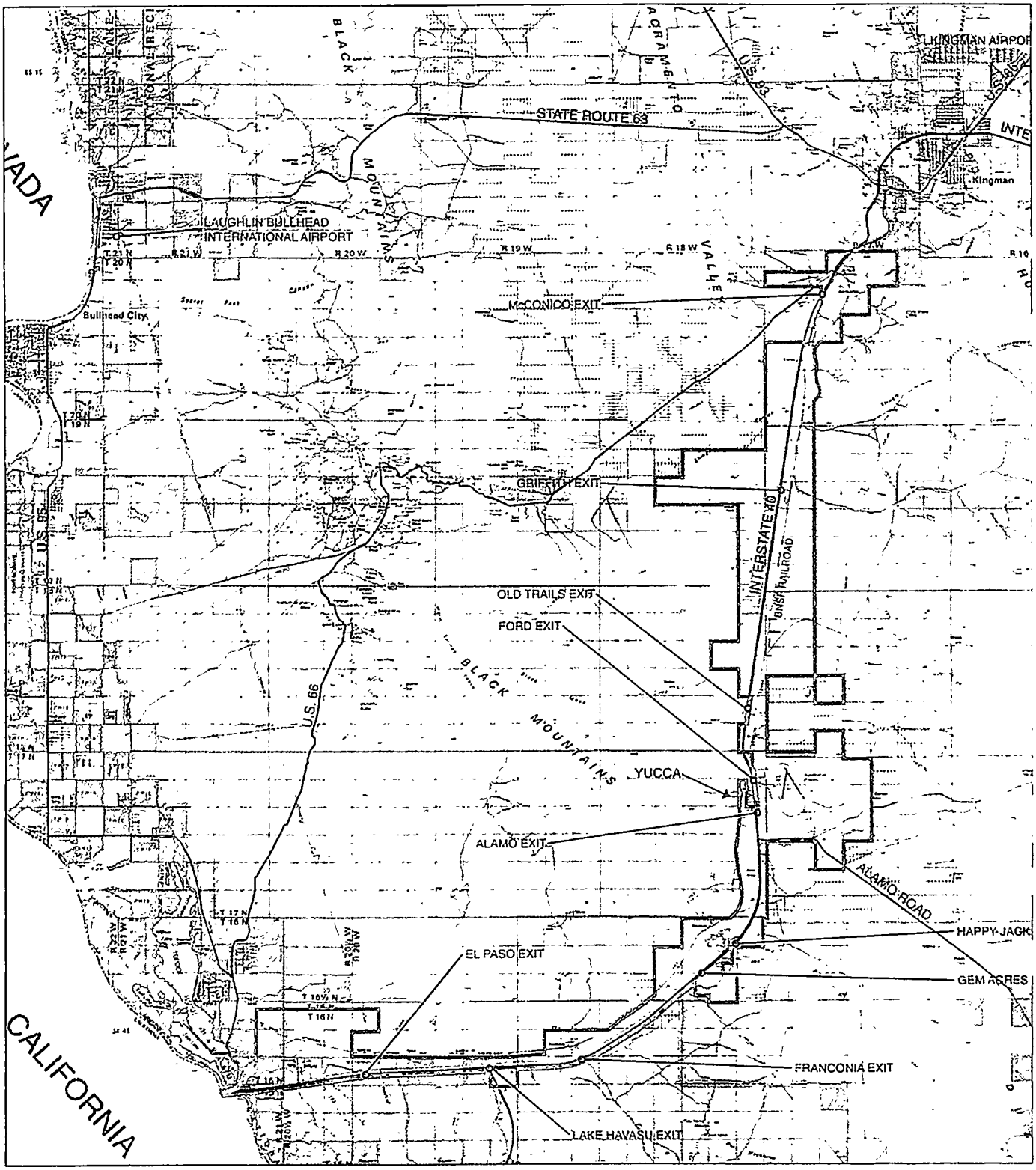


Figure 3.4-3
General Soils Map
Power Plant and
Western Transmission Line Routes

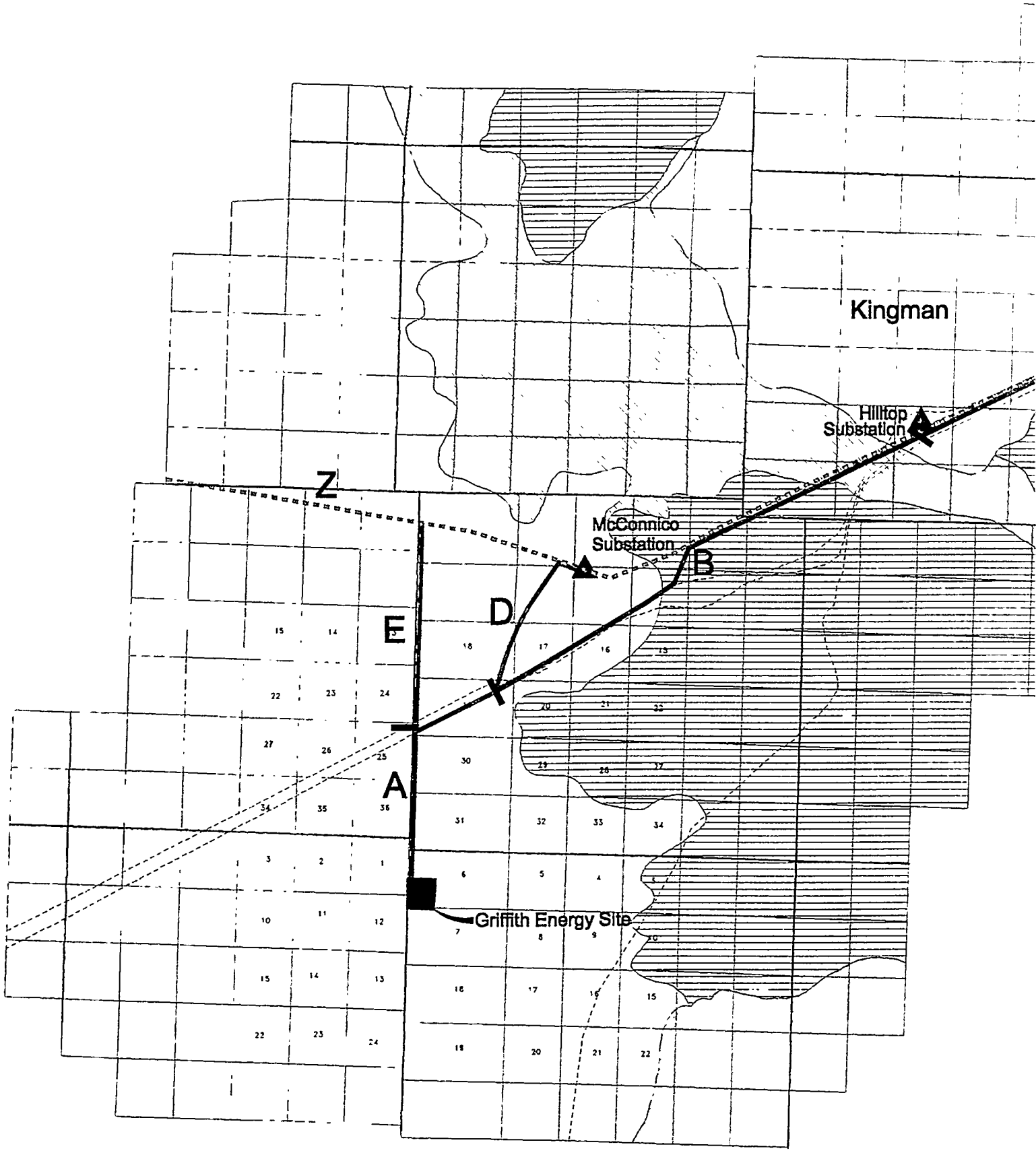


LEGEND

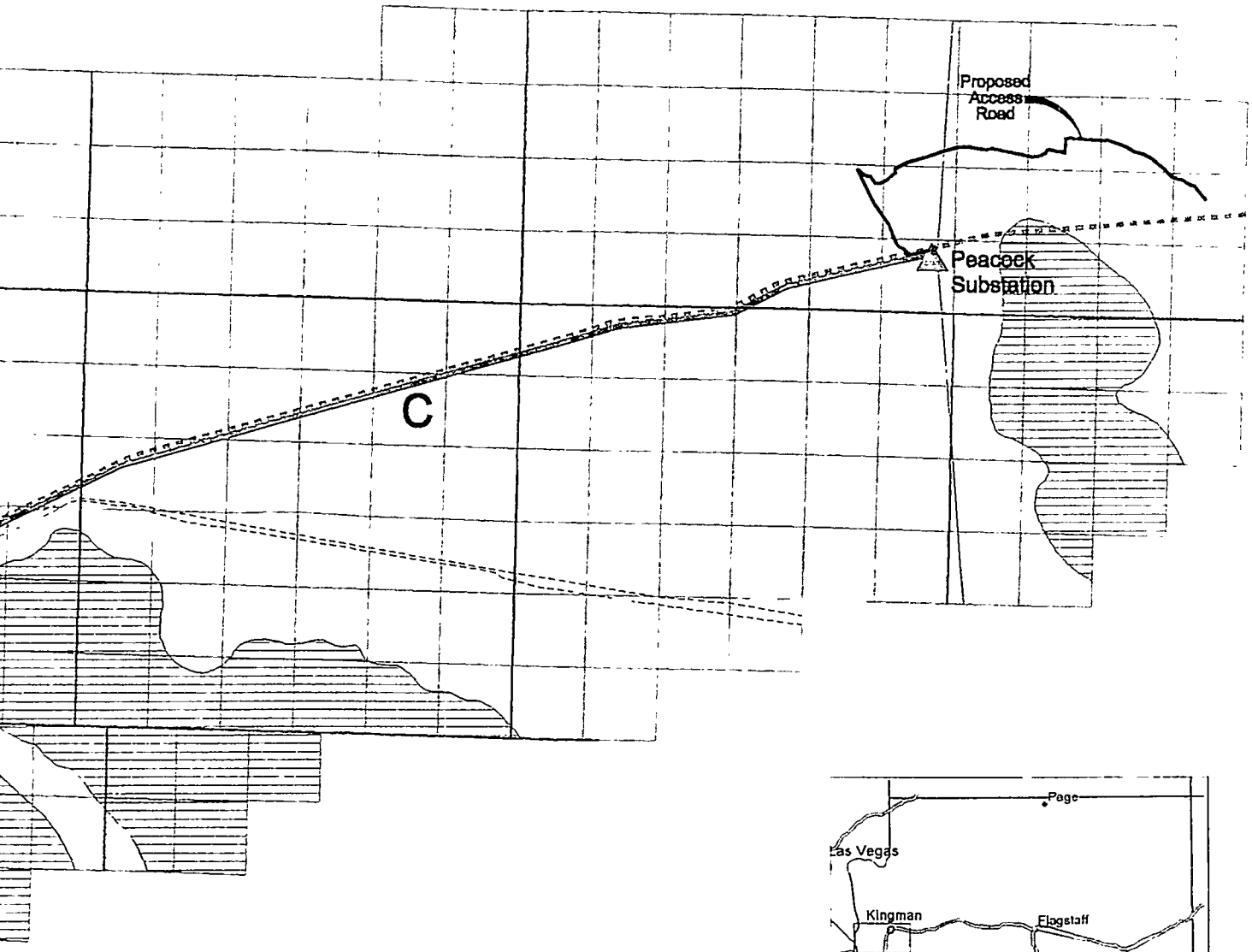
I-40 Industrial Corridor Boundary

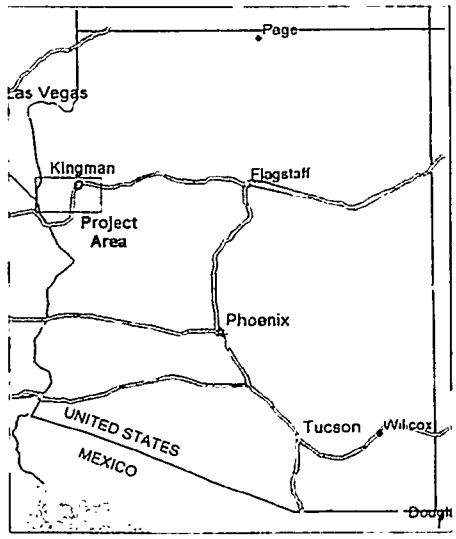
Figure 3.8-2c
Location and Extent of I-40 Industrial Corridor

\681\i40_corridor.dwg



\68!\report-eis\f :^10-1a dwg





Legend

- Existing 230kV Line
- Proposed 230kV Line
- Proposed Access Road
- Proposed Substation
- Existing Substation

Visual Resorce Management Classes

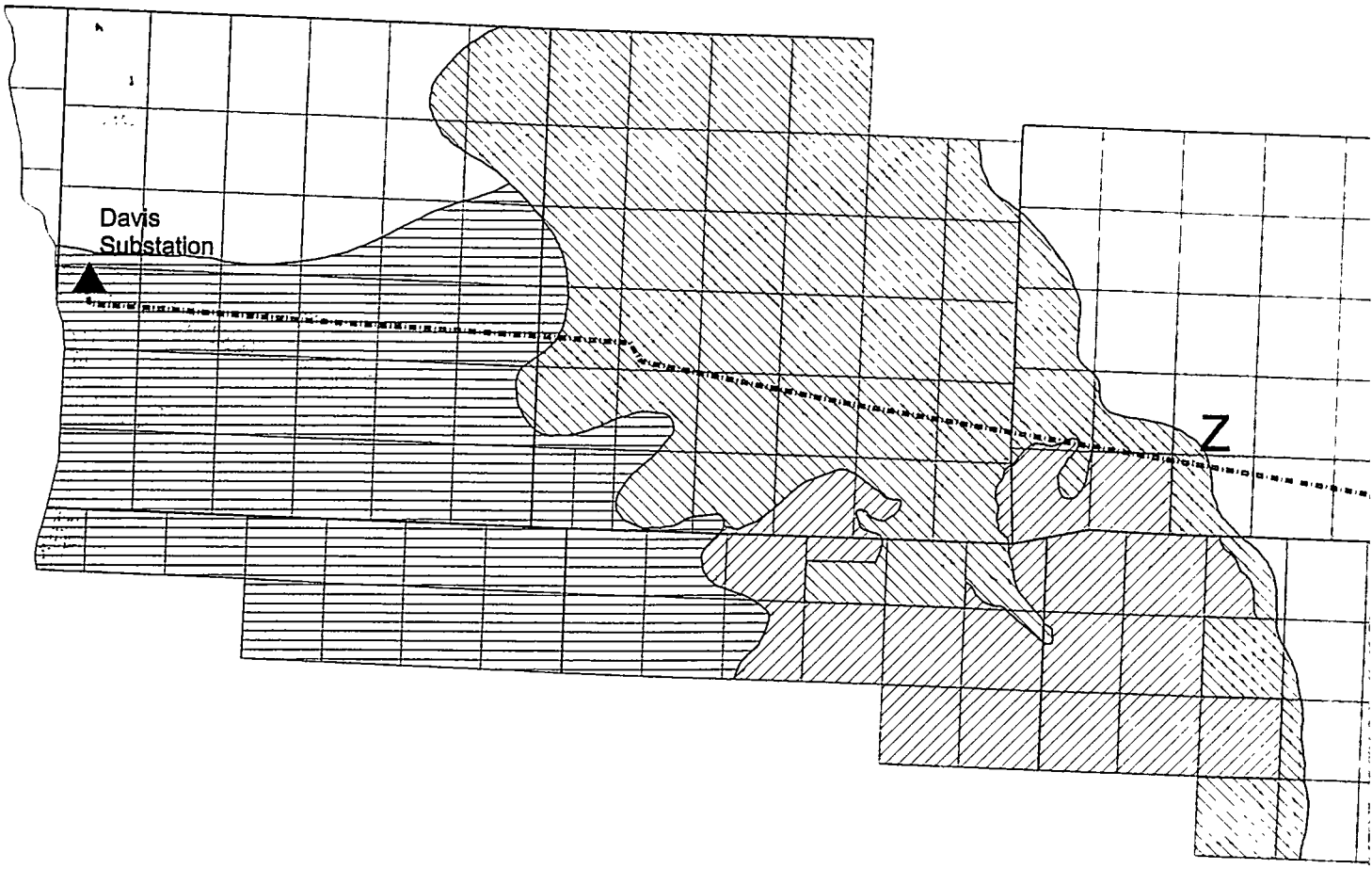
- Class I
- Class II
- Class III
- Class IV

N

0 2 4

Scale (mi)

Figure 3.10-1a
Visual Resource Management
Power Plant and
Eastern Transmission Line Routes

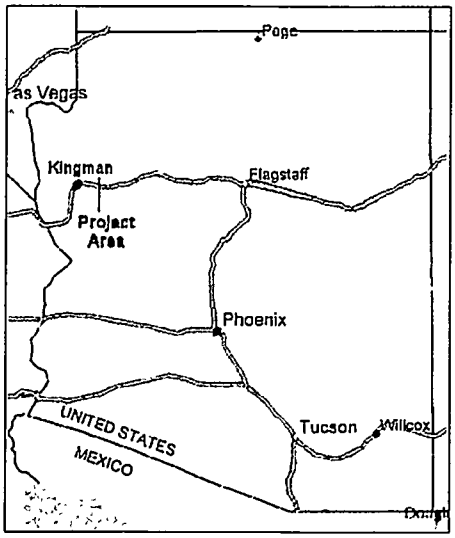


Legend

- Existing 230kV Line
- Proposed 230kV Line
- Existing Substation

Visual Resorce Management Classes

- Class I
- Class II
- Class III
- Class IV



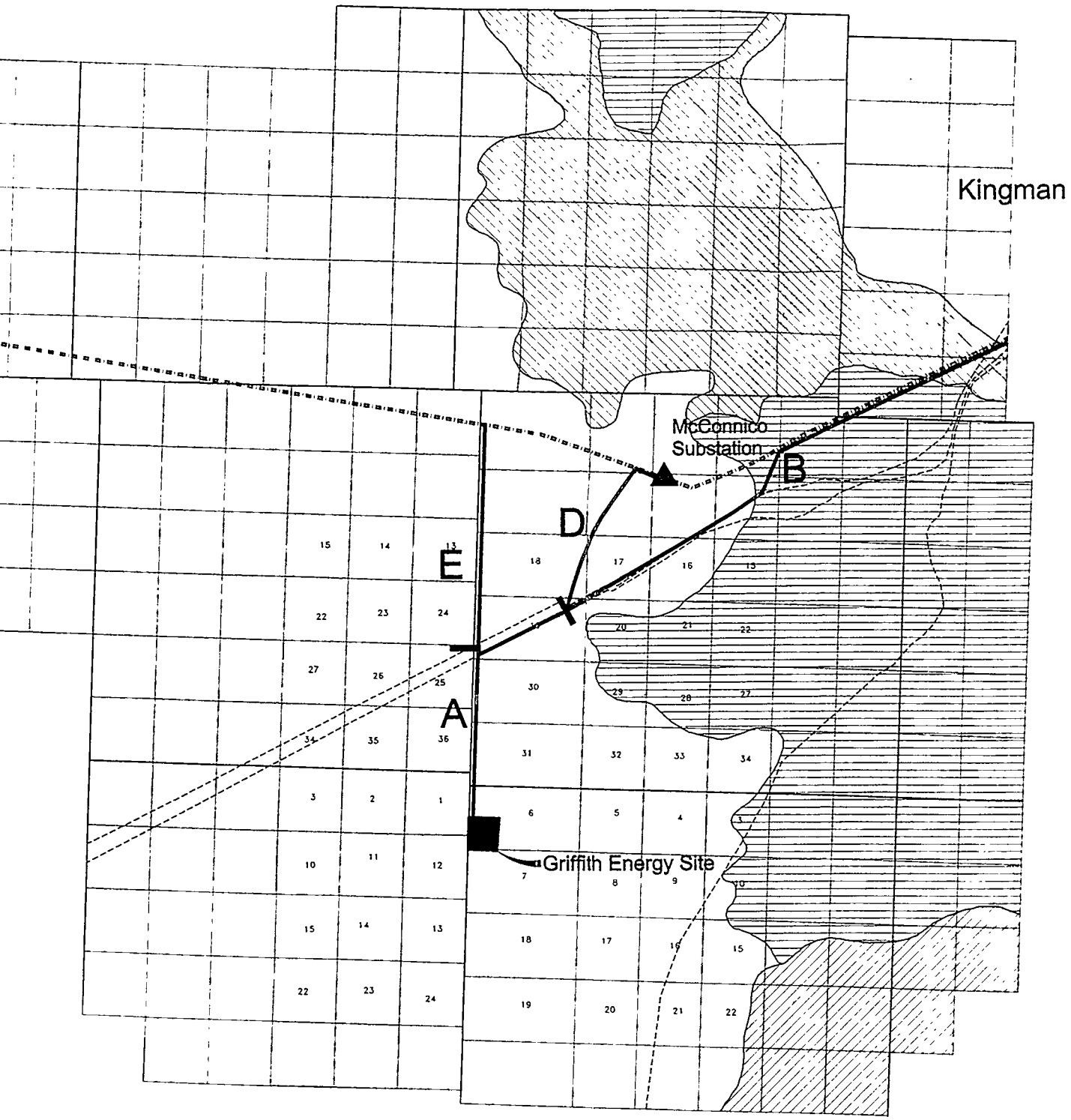
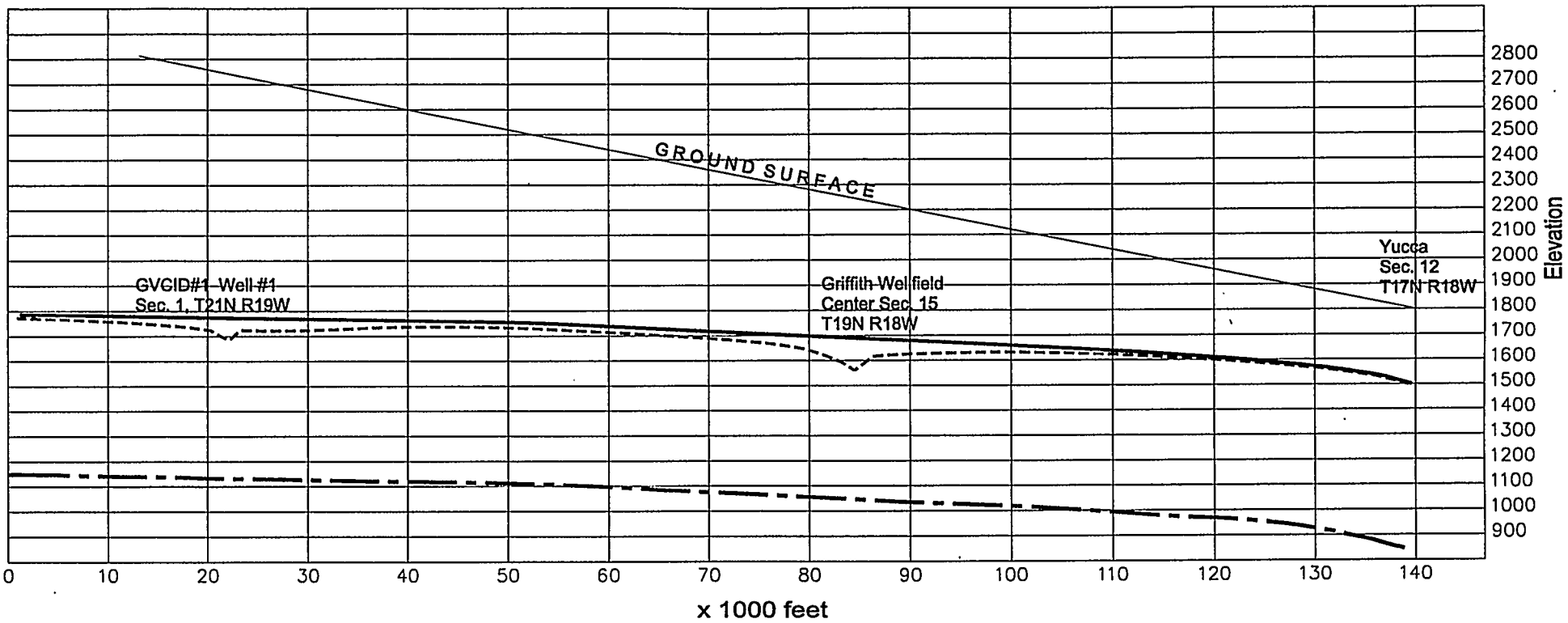


Figure 3.10-1b
Visual Resource Management
Power Plant and
Western Transmission Line Routes

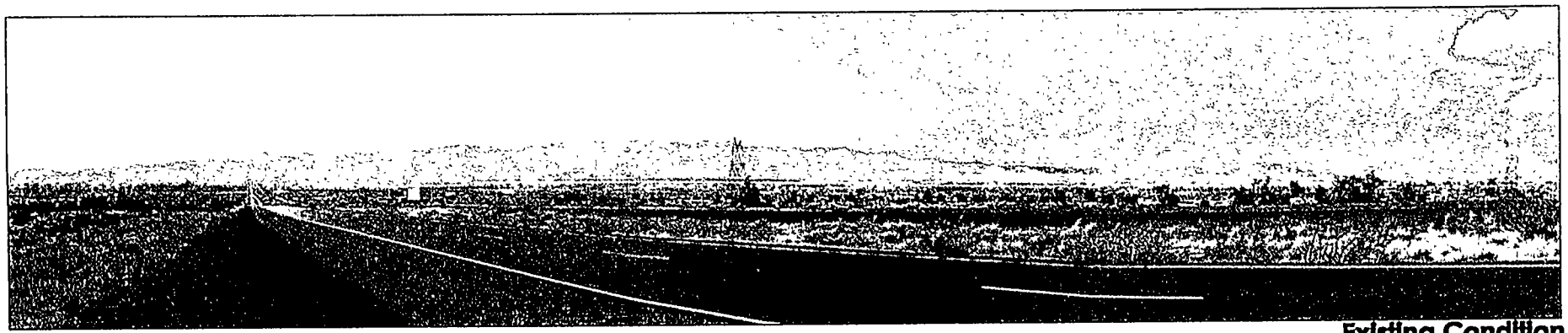


Present Water Table

Projected Drawdown at 40 years

ADWR Limit of Maximum Development 1200' below the surface

Figure 4.2-5
Cross-Section Extended from
GVCID#1 Well 1 through
Griffith Wellfield to Yucca



Existing Condition

The view is of the existing 230kV transmission line crossing at Interstate 40.

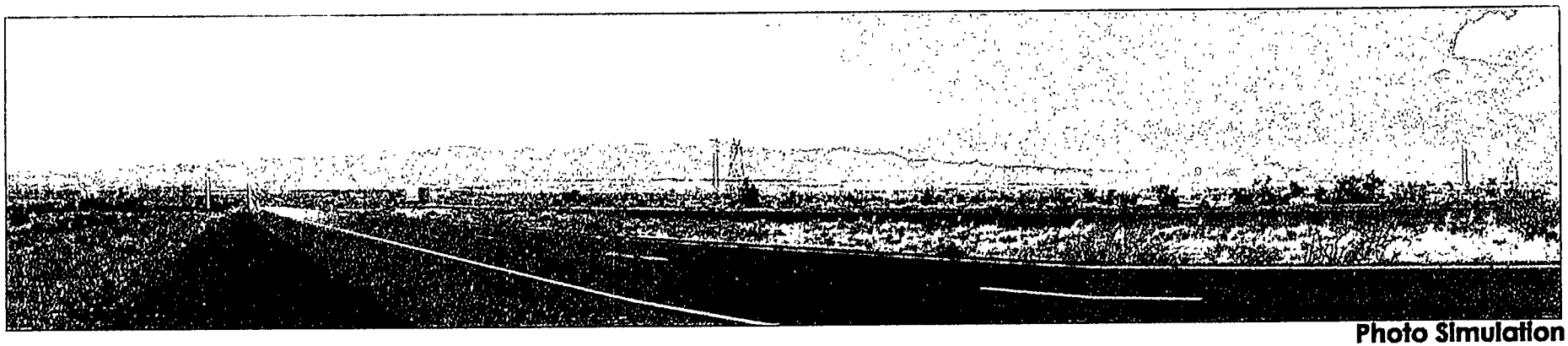
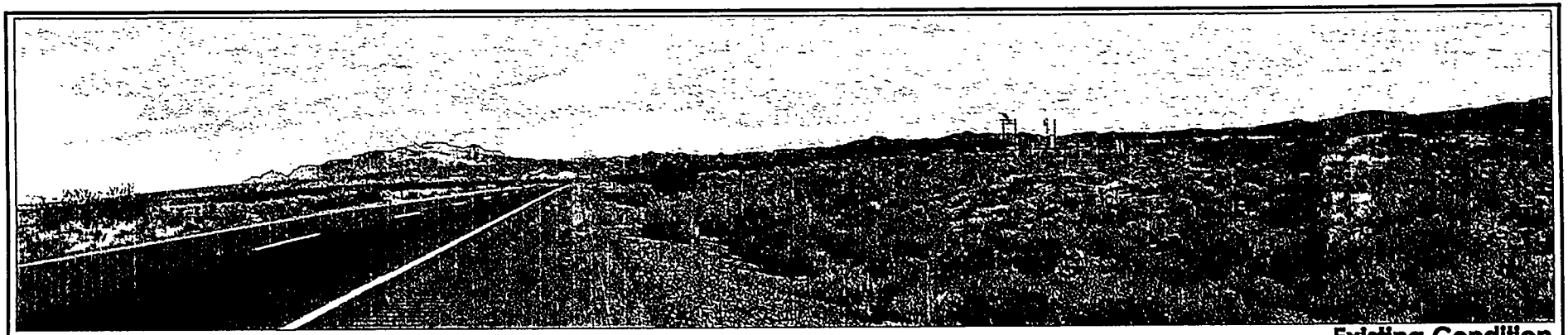


Photo Simulation

Simulation of the new single steel pole 230kV transmission line constructed adjacent to the existing line.

Figure 4.9-4a
Photo Simulation of Single Pole Alternative Between
Hilltop Substation and Peacock Substation from KOP 4

s/681kop-4a.dwg



Existing Condition

KOP 6 is at northbound Interstate 40 at the proposed transmission line crossing.

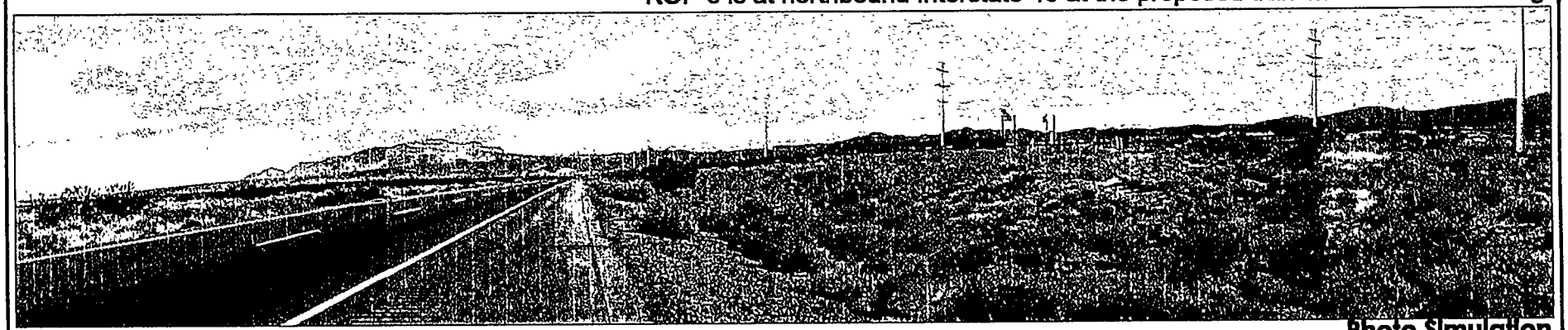


Photo Simulation

The 1,000 foot span extends across the highway between two single shaft steel pole structures. The corner pole is located east of the railroad (rightside of photo). The proposed line is visible along the east (right) side of the railroad tracks.

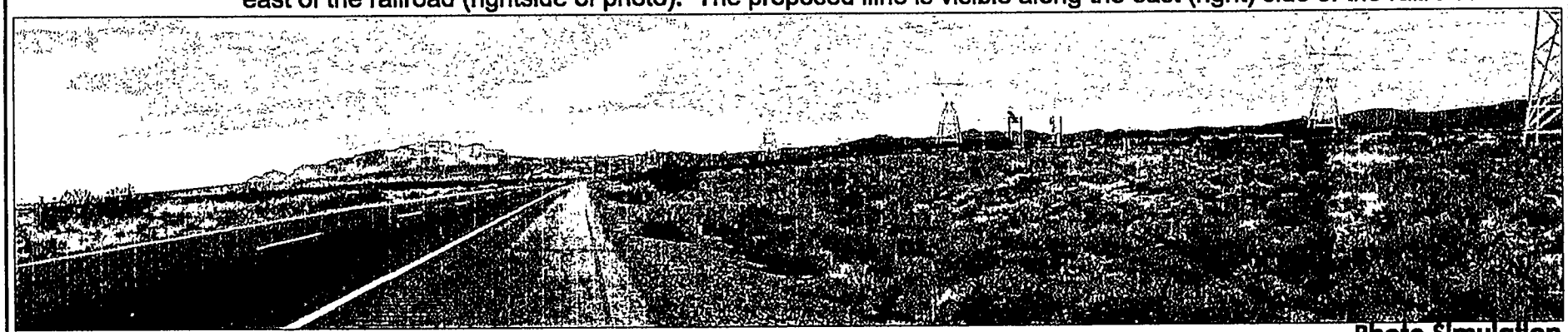


Photo Simulation

The 1,200 foot span extends across the highway between two steel lattice structures.

Figure 4.9-6

Photo Simulations of Single Pole and Lattice Structure Alternatives from KOP 6

p-6a.dwg

Existing Condition

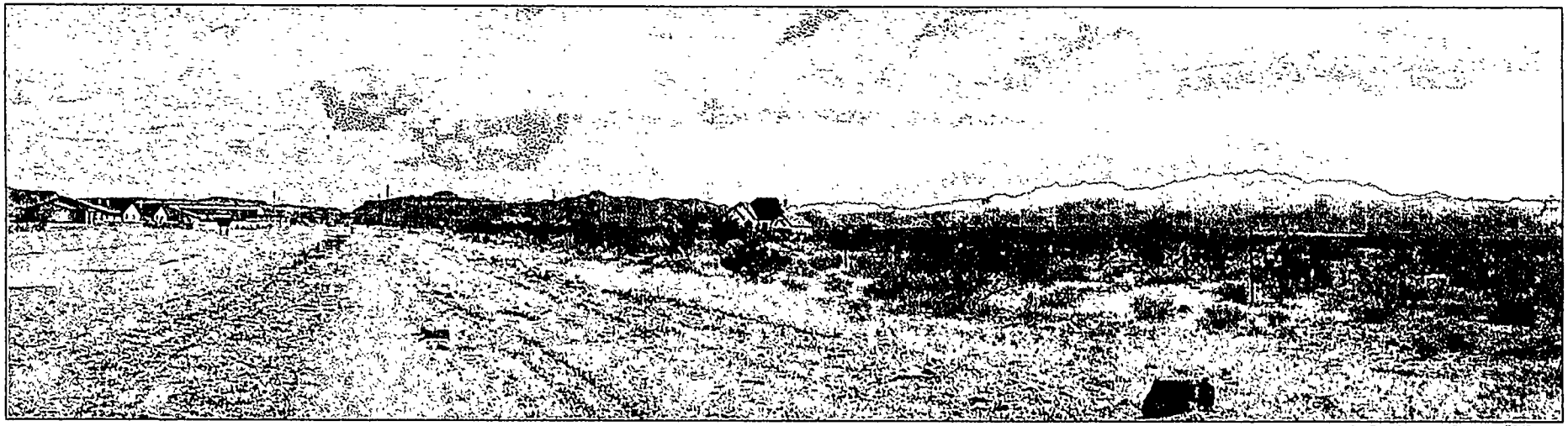
The view is to the east from the Walnut Creek Estates Subdivision on Route 66.

Photo Simulation

Simulation of the new 230kV Transmission line installed with single shaft steel structures. The proposed line is 0.7 miles from the KOP, and is visible below the base of the mountains backdrop.

Figure 4.9-7
Photo Simulation of Single Pole Alternative from KOP 7

\\t ms op-7a dwg



Existing Condition
The view is to the east from the Walnut Creek Estates Subdivision on Route 66.

Photo Simulation
Simulation of the new 230kV Transmission line installed with steel lattice structures. The proposed line is 0.7 miles from the KOP, and is visible below the base of the mountains backdrop.

\681\681sims\681kop-7.dwg

Figure 4.9-8
Photo Simulation of Lattice Structure Alternative from KOP 7

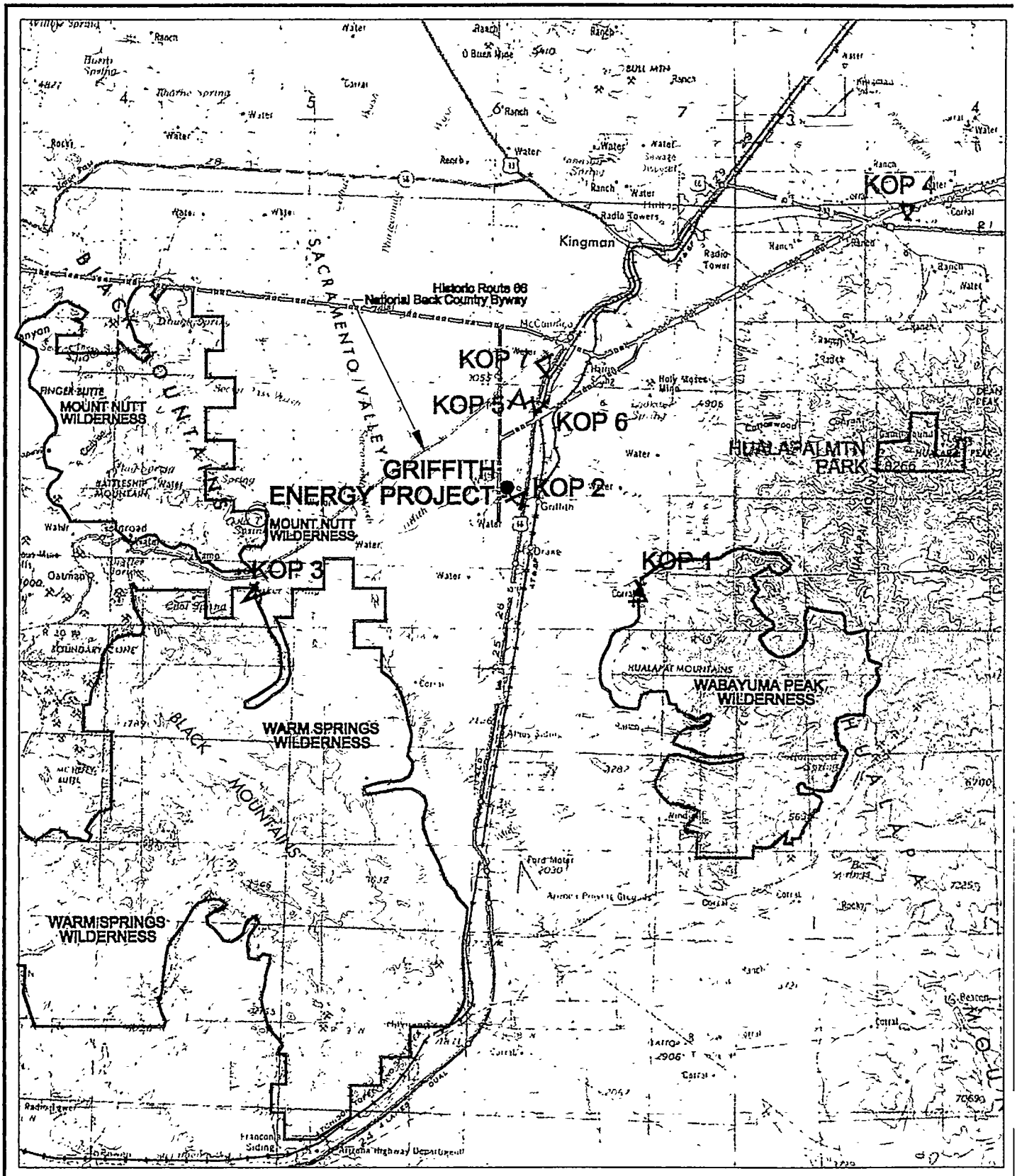


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Figure 4.9-9
Recreation & KOPs

CHAPTER 3
NORTHERN GAS PIPELINE ALTERNATIVE

As described in Chapter 1 of the Final Environmental Impact Statement (EIS), this chapter has been developed to address a new routing alternative for the proposed gas pipeline to the Transwestern Pipeline Company's supply lines north of the proposed pipeline. The alternative is presented in this chapter since it deals with one complete component of the proposed Griffith Energy Project.

Whenever the potential impacts on a resource area are considered the same as for the proposed action, this chapter simply refers to the Draft EIS and does not repeat the impact analyses.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.2 ALTERNATIVES

2.2.1.1 Alternative Gas Pipelines

An alternative route for the proposed natural gas supply pipeline between the Plant Site and the existing pipeline owned by Transwestern Pipeline Company (TPC) is being considered. This alternative would proceed due north from the Plant Site either in the County road ROW located 0.5 miles east of the western boundaries of Township (T) 19N., Range (R) 17W., Section (sec.) 6, and in T 20N., R 17W., Sections 31, 30, and 19 or near this ROW in a separate easement. This route is shown on Figure 2.2-1. After construction, the ROW would be reclaimed to landowner specifications.

CHAPTER 3 AFFECTED ENVIRONMENT

3.1 GEOLOGY/MINERALS/GEOLOGIC HAZARDS

3.1.1 Power Plant and Associated Facilities

Geological conditions are the same for the alternative gas pipeline route to the north from the power plant as those described in section 3.1.1 of the Draft EIS.

3.2 WATER RESOURCES

3.2.1 Power Plant and Associated Facilities

3.2.1.1 Groundwater

Groundwater conditions for the alternative gas pipeline route north from the power plant site are the same as described in sections 3.2.1.1 and 3.2.2.1 of the Draft EIS.

3.2.1.2 Surface Water

Surface water conditions for the alternative gas pipeline route north from the power plant site are the same as described in section 3.2.1.2 and 3.2.2.2 of the Draft EIS, with only minor location changes.

3.3 METEOROLOGY/AIR QUALITY

Climate and Air Quality conditions in the location of the alternative gas pipeline are similar to those described in Sections 3.3.1, Climate and 3.3.2, Air Quality of the Draft EIS.

3.4 SOILS

3.4.1 Power Plant and Associated Facilities

Soils at the location of the gas pipeline routes located on BLM lands have been mapped by the Natural Resources Conservation Service (NRCS, 1998). Three mapping units have been identified along the pipeline route: 052 Casteneda extremely gravelly loam, dry, 1 to 7 percent slopes; 037 Arizo-Franconia-Riverwash complex, dry, 1 to 3 percent slopes; and 150 Mohon-Poachie complex, dry, 2 to 15 percent slopes

052-Casteneda extremely gravelly loam, dry, 1 to 7 percent slopes, has formed on fan terraces with slopes of 1 to 7 percent. These are moderately deep soils over a lime cemented hardpan, are in an upland landscape position, and not subject to flooding. These soils have a moderate shrink-swell potential. The hazard of water erosion is slight, while the hazard of wind erosion is slight. Corrosivity for uncoated steel is high. Potential rooting depth is 20 to 40 inches. Available water capacity for these soils is moderate.

037-Arizo-Franconia-Riverwash complex, dry, 1 to 3 percent slopes, has formed on flood plains and alluvial fans. Riverwash soils are in unstabilized areas of sandy, silty, or gravelly sediments. These areas are flooded, washed, and reworked by streams so frequently that they support little or no vegetation. These are very deep soils. The Arizo soils are subject to frequent flooding and the Franconia soils flood occasional. The soils have a moderate shrink-swell potential. The hazard of wind erosion is slight and the hazard of water erosion is slight. Corrosivity for uncoated steel is high. Available water capacity is low.

150-Mohon-Poachie complex, dry, 2 to 15 percent slopes, has formed on fan terraces with slopes of 2 to 15 percent. These are deep and very deep soils. They are in an upland landscape position, and are not subject to flooding. These soils have a high shrink-swell capacity. The hazard of water erosion is moderate, while the hazard of wind erosion is slight. Corrosivity for uncoated steel is high. Potential rooting depth is more than 60 inches. Available water capacity is high.

The alternative pipeline route east of the proposed pipeline route would cross the same soil mapping units as the proposed route (with the exception of the Poachie mapping unit), but would differ slightly in the length of pipeline in each of the mapping units.

3.5 VEGETATION

3.5.1 Power Plant and Associated Facilities

The alternative gas pipeline is located within desert scrub communities situated on west-facing alluvial fans of the Sacramento Valley. The route is occupied by Mohave creosotebush-yucca on soils in the northern portion and the southern portion of the route is occupied by Sonoran creosotebush-bursage. Vegetation communities correlated to the soil map units in 3.4 Soils are as follows:

052- Casteneda, dry; creosotebush, white bursage, range ratany, and rayless goldenhead.

037-Arizo-Franconia-Riverwash complex; creosotebush, white bursage, white burrobush, and catclaw acacia.

150-Mohon-Poachie; Big Galleta, Anderson wolfberry, and range ratany. Poachie; white bursage, creosote bush, and Joshua Tree.

No wetlands occur in the route of the alternative gas pipeline located. No special status plant species are known from the location of the alternative gas pipeline.

3.6 WILDLIFE

3.6.1 Power Plant and Associated Facilities

Wildlife resources in the location of the alternate pipeline route are essentially the same as described in Section 3.6 of the Draft EIS. No species of special concern were observed during the survey of the alternative pipeline route, but the area has been determined to contain marginal habitat for four species of special interest including rosy boa, chuckwalla, Gila monster, and Sonoran desert tortoise.

3.7 CULTURAL RESOURCES

3.7.1 Power Plant and Associated Facilities

3.7.1.2 Gas Pipelines

Cultural resources in the location of the alternate pipeline route are essentially the same as described in Section 3.7 of the Draft EIS.

3.8 LAND USE

3.8.1 Power Plant and Associated Facilities

Land ownership for the entire alternate pipeline route is private. Area land ownership is shown in Figures 3.8-1a & 1b, 3.8-2a & 2b, and 3.8-3a & 3b of the Draft EIS. All affected lands are desert scrub rangelands.

3.9 RECREATION

3.9.1 Power Plant and Associated Facilities

Recreation conditions and opportunities in the location of the alternate pipeline route are the same as described in Section 3.9 of the Draft EIS.

3.10 VISUAL RESOURCES

3.10.1 Power Plant and Associated Facilities

Visual resources in the location of the alternate pipeline route are the same as described in Section 3.10 of the Draft EIS.

3.11 SOCIOECONOMICS

Socioeconomic conditions in the area are the same as those described in Section 3.11 of the Draft EIS.

3.12 TRANSPORTATION

3.12.1 Power Plant and Associated Facilities

Current access to the alternative gas pipeline route consists of three primary roadways: (1) a primitive access road developed along the north-south section lines between R17W and R18W for about six miles north of the proposed Griffith Energy site - this access road is approximately 0.5 miles west of the alternative pipeline route; (2) an access road beside portions of the Interstate I-40 in T 20N., R 17W., and (3) a non-maintained road diagonally crossing of R 17W., T 20N., secs. 19, 30, and 31.

3.13 NOISE

3.13.1 Power Plant and Associated Facilities

The existing noise conditions in the area of the alternative gas pipeline are the same as described in Section 3.13 of the Draft EIS.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

Table 4.0-1 presents a comparison of selected elements potentially affected by the proposed and alternative gas supply pipeline routes to the TPC supply line.

Table 4.0-1. Comparison of Gas Supply Pipeline Routes from the Existing Transwestern Pipeline Company Pipeline

ELEMENT	PROPOSED PIPELINE	ALTERNATIVE PIPELINE
Length (feet)	14,230	15,500
Acres in 50-ft. ROW	16.3	17.8
Soil Units Crossed	4	3*
Vegetation types crossed	Sonoran desert scrub	Sonoran and Mohave desert scrub
Vegetation removed from 20-ft. centerline (acres)	0**	7.1
Special status species potential	Low	Low

*Same three as in proposed route.
**Existing roadbed would be used.

4.1 GEOLOGY/MINERALS/GEOLOGIC HAZARDS

4.1.3.1.2 Alternative Gas Pipeline (Northern)

Potential impacts from the alternative gas pipeline would be similar to those described in Section 4.1.2.1 of the Draft EIS.

4.2 WATER RESOURCES

4.2.3.1.2 Alternative Gas Pipeline (Northern)

Groundwater. Potential impacts to the groundwater from the alternative pipeline would be the same as those described in Sections 4.2.2.1.1 and 4.2.2.2.1 in the Draft EIS.

Surface water. Potential impacts to surface water from the alternative pipeline would be the same as those described in Section 4.2.1.2.2 of the Draft EIS. The alternative pipeline would cross three branches of Griffith Wash (designated as 100-year floodplain) in slightly different locations than the proposed pipeline.

The pipeline crossing areas of the flood plains would be examined to determine if the crossing was experiencing erosion or deposition. If erosion was the predominant activity, the pipeline would be buried to a depth greater than standard depth. If deposition was the predominant activity, the pipeline would be buried according to standard design.

4.3 METEOROLOGY/AIR QUALITY

4.3.3.1.2 Alternative Gas Pipeline (Northern)

Potential impacts to air quality from the alternative pipeline are the same as those described in Section 4.3.3.1 of the Draft EIS.

4.4 SOILS

4.4.3.1.2 Alternative Gas Pipeline (Northern)

Potential impacts to soils from the alternative pipeline are similar to those described in sections 4.4.2.1. and 4.4.3.1 in the Draft EIS. The alternative pipeline route would only cross three of the four soil mapping units that are crossed by the proposed pipeline route. The alternative route would not cross the Poachie very gravelly loam, dry, 1 to 4 percent slopes. Instead, the alternative route would create more disturbance in the Casteneda extremely gravelly loam, dry, 1 to 7 percent slopes.

4.5 VEGETATION

4.5.3.1.2 Alternative Gas Pipeline (Northern)

The area of disturbance would be restricted to the locations of overland travel from the existing roads to the alternative pipeline right-of-way. Construction of the gas supply pipeline would result in the direct and long-term loss of about 17.8 acres of Sonoran and Mohave desert scrub habitat (divided approximately equally between the two vegetative communities), while the proposed pipeline would disturb the Sonoran scrub community almost exclusively. It would take several years to reestablish a protective cover of vegetation on the disturbed soils. This loss would be a very small portion of the affected community type.

4.6 WILDLIFE

4.6.3.1.2 Alternative Gas Pipeline (Northern)

Long-term impacts include the habitat loss of approximately 17.8 acres for the alternative gas supply pipeline. Since all of the habitats encountered within the Project area are widely distributed in the region, loss of this habitat would not adversely affect the viability of any species. No riparian or wetland areas, which exhibit the greatest abundance of diversity within the desert communities, would be impacted.

The construction and operation of the alternative gas pipeline is not expected to have any adverse impacts on Federal and/or state listed species of special concern. Site reconnaissance and subsequent studies revealed no areas of suitable habitat or known locations or occurrences of federal or state listed threatened and endangered species within the Project area. However, three BLM sensitive species (rosy boa, chuckwalla, and Gila monster) and one BLM and AGFD sensitive species (Sonora Desert tortoise) have the potential to occur along the alternative.

The four sensitive species have a low potential for occurrence within the alternative pipeline route. Based on observations of lack of suitable habitat and existing land use conditions, populations or individuals of these four species are unlikely to occur within the pipeline route. In general, the habitats encountered within the Project area are widely distributed in the region. Even though impacts are not expected to be significant, Griffith Energy would implement the following mitigation measures for wildlife:

- A qualified biologist would be responsible for developing and implementing a worker education program to inform, educate, and properly identify any species of special concern.
- Specific seeding rates and approved seed mixtures would be developed on a site-specific basis in consultation with the landowner.

4.7 CULTURAL RESOURCES

4.7.3.1.2 Alternative Gas Pipeline (Northern)

Potential impacts to cultural resources from the alternative pipeline are the same as those described in Section 4.7.2.1 of the Draft EIS.

4.8 LAND USE AND RECREATION

4.8.3.1.2 Alternative Gas Pipeline (Northern)

Potential impacts to land use and recreation are described in Section 4.8.2.1 of the Draft EIS. No other potential impacts are expected in the alternative pipeline route.

4.9 VISUAL RESOURCES

4.9.3.1.2 Alternative Gas Pipeline (Northern)

Potential impacts to the visual resources of the Project area from the construction of the alternative gas supply pipeline are the same as described in Section 4.9.2.1 in the Draft EIS.

4.10 SOCIOECONOMICS

4.10.3.1.2 Alternative Gas Pipeline (Northern)

Potential long-term impacts from the alternative gas pipeline would not be any different than those described for the project in Section 4.10.2.1 of the Draft EIS.

4.11 TRANSPORTATION

4.11.3.1.2 Alternative Gas Pipeline (Northern)

Impacts on transportation for the construction of the alternative gas pipeline would be short-term. Traffic effects related to the project include daily commuting by construction employees and other construction-related delivery traffic as well as the temporary disruption of traffic on three lightly used roads.

During pipeline construction, materials would arrive via truck and would be delivered to the proposed project site via existing access roads and minor amounts of overland travel. A staging/laydown area may be constructed at the Power Plant. Traffic on the three unpaved roads paralleled by the pipeline (one paralleling the Interstate highway, one along the west sections lines of T 20N., R 17W., secs. 19, 30, and 31 and one diagonally crossing those same sections) would be disrupted briefly when traversed by the construction crews.

4.12 NOISE

4.12.3 Alternatives

Potential impacts to noise were described in Section 4.12 in the Draft EIS. The potential impacts from the alternative gas pipeline would not be different from those already described.

4.13 HEALTH AND SAFETY

4.13.3 Alternatives

Potential impacts to health and safety were described in Section 4.13 in the Draft EIS. The potential impacts from the alternative gas pipeline would not be different from those already described.

4.14 ENVIRONMENTAL JUSTICE

4.14.3 Alternatives

Potential impacts to environmental justice were described in Section 4.14 in the Draft EIS. The potential impacts from the alternative gas pipeline would not be different from those already described.

4.15 ELECTRIC AND MAGNETIC FIELDS

4.15.3 Alternatives

Potential impacts to these resources were described in Section 4.15 in the Draft EIS. The potential impacts from the alternative gas pipeline would not be different from those already described.

APPENDIX AF
PIPELINE BREAKOUT FOR BLM

3.0 AFFECTED ENVIRONMENT FOR BLM LANDS

3.1 GEOLOGY/MINERALS/GEOLOGIC HAZARDS

3.1.1 POWER PLANT AND ASSOCIATED FACILITIES

Portions of the Gas Pipeline Located on BLM LandsGeological conditions occurring at the locations of the proposed portions of the gas pipeline routes located on BLM lands are described in Section 3.1 of the DEIS. The proposed gas pipeline route is located within the Sacramento Valley, an agraded desert plain which drains to the south. The Sacramento Valley is mantled by thick deposits of unconsolidated sand, gravel, cobbles and boulders several hundred feet thick which date from late Pleistocene to recent times (Gillespie and Bentley, 1971).

The Project area lies within seismic risk zone 2 (on a scale of 0 to 3, with 3 being the highest risk) (Algermissen, 1969). Moderate damage from earthquakes corresponding to an intensity of 7 (on the Modified Mercalli Intensity Scale which measures intensities from 0 to 10) is the maximum impact which can be expected within the area.

3.2 WATER RESOURCES

3.2.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

3.2.1.1 Groundwater

Groundwater in storage in the Sacramento Valley aquifer has been estimated to be in the range of 6.5 to 13 million acre-feet, based on an average specific yield of 5 to 10 percent (ADWR, 1994). It has been estimated by the ADWR that there is 2.3 million acre-feet of water in storage in the Sacramento Valley aquifer above a depth of 1,200 feet below the surface (Table 3.2-1) (ADWR, 1994). Natural annual recharge of the aquifer has been estimated at 4,000 acre-feet/year with discharge to the Colorado River west of Yucca equaling recharge (Roscana, 1991 and Gillespie and Bentley, 1971).

Water withdrawal from the aquifer has varied over time, due primarily to intermittent mining activity. In 1981, because of scaled back mining operations and subsequent reduced water demand, the volume of withdrawal was reduced to 1,935 acre-feet per year; and in 1986 the rate of withdrawal was further reduced to 500 to 700 acre-feet per year, still primarily for use in the Mineral Park Mine operation (Roscana, 1991).

Little additional withdrawal from the groundwater aquifer has been initiated since 1994. There are no springs in the area that are being used as sources of groundwater. The gas pipeline would be located where groundwater is approximately 1,000 to 1,500 feet below ground surface.

Water level fluctuations in the unconfined aquifer have been minimal. The USGS (Boner et al. 1991, Smith et al. 1993, 1994, and 1995) have been tracking water levels in 10 wells within the Sacramento Valley for as long as 46 years. The median water level fluctuation for the period of record was 6.09 feet. The maximum observed fluctuation for the period of record was 47.5 feet for a well in Section 21, T21N, R18W, located 8 miles west of Kingman. Water level fluctuations between 1990 and 1993 ranged from 0.1 feet to 3.2 feet for the 10 wells, and generally showed decreases in the depth to water, i.e., an increase in the elevation of the water table. The ADWR (1994) predicts a 1.5-foot per year decrease in the water table elevation in the Golden Valley area.

3.2.1.2 Surface Water

Streams are ephemeral throughout the lower elevations of the Project Area and flow only in response to storm events. There are two named washes, Griffith Wash and Black Rock Wash, and several unnamed washes in the vicinity of the gas pipeline and power plant. As the streams exit the mountain canyons, they flow southwest across highly dissected alluvial fans which act as an infiltration sink. Stream channels diminish in size and dry up due to recharge of the alluvium and increased evaporation associated with higher temperatures at the lower elevations.

The proposed portions of the gas pipeline located on BLM lands, and access roads would not cross any designated 100 year flood plains. Floodplain boundaries are determined by the Federal Emergency Management Agency (FEMA). The FEMA designated 100 year floodplain within the vicinity of the pipeline are shown on Figures 3.2-2a and 3.2-2b of the DEIS.

3.3 METEOROLOGY/AIR QUALITY

3.3.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Climate and Air Quality conditions in the location of the portions of the gas pipeline located on BLM lands are similar to those described in Sections 3.3.1 and 3.3.2 of the DEIS.

3.4 SOILS

3.4.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Soils at the location of the gas pipeline routes located on BLM lands have been mapped by the Natural Resources Conservation Service (NRCS, 1996). Four mapping units have been identified along the pipeline route: 052 Casteneda extremely gravelly loam, dry, 1 to 7 percent slopes; 052B Castaneda extremely gravelly loam, 1 to 7 percent slopes; 073B Goodsprings gravelly sandy loam, 1 to 15 percent slopes; and 150 Mohon-Poachie complex, dry, 2 to 15 percent slopes.

052-Castaneda extremely gravelly loam, dry, 1 to 7 percent slopes, has formed on fan terraces with slopes of 1 to 7 percent. These are moderately deep soils over a lime cemented hardpan, are in an upland landscape position, and not subject to flooding. These soils have a moderate shrink-swell potential. The hazard of water erosion is slight while the hazard of wind erosion is very

slight. Corrosivity for uncoated steel is high. Potential rooting depth is 20 to 40 inches. Available water capacity for these soils is moderate.

052B-Casteneda extremely gravelly loam, 1 to 7 percent slopes, has formed on the proximal ends of fan terraces with slopes of 1 to 7 percent. These are moderately deep soils over a lime cemented hardpan, and are not subject to flooding. These soils have moderate shrink-swell potential. The hazard of wind erosion is very slight, while the hazard of water erosion is slight. Corrosivity for uncoated steel is high. Potential rooting depth is 20 to 40 inches. Available water capacity for these soils is moderate.

073-Goodsprings gravelly sandy loam, dry, 1 to 15 percent slopes , has formed on fan terraces with slopes of 1 to 15 percent. These are shallow to moderately deep soils over a lime cemented hardpan. They are in an upland landscape position, and are not subject to flooding. These soils have a moderate shrink-swell potential. The hazard of wind erosion is slight, while the hazard of water erosion is moderate. Corrosivity for uncoated steel is high. Potential rooting depth is 20 to 40 inches. Available water capacity is very low.

150-Mohon-Poachie complex, dry, 2 to 15 percent slopes, has formed on fan terraces with slopes of 2 to 15 percent. These are deep and very deep soils. They are in an upland landscape position and are not subject to flooding. These soils have a high shrink-swell potential. The hazard of water erosion is moderate while the hazard of wind erosion is slight. Corrosivity for uncoated steel is high. Potential rooting depth is more than 60 inches. Available water capacity is high.

3.5 VEGETATION

3.5.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

The proposed gas pipeline is located within desert scrub communities situated on west-facing alluvial fans of the Sacramento Valley. The higher locations are occupied by Mohave creosotebush-bursage-mixed scrub on deeper, sandier soils and Mohave creosotebush-yucca on soils richer in carbonates. The warmer, drier, lower locations are occupied by Sonoran creosotebush-bursage.

Vegetation communities correlated to the soil map units in section 3.4 Soils are:

052 Casteneda: present plant community; creosotebush, white bursage, range ratany, and rayless goldenhead.

052B Casteneda: present plant community; creosotebush, range ratany, Joshua tree, and broom snakeweed.

073 Goodsprings: present plant community; creosotebush, white bursage, ocotillo, and Nevada Mormontea.

150 Mohon Poachie: present plant community - Mohon; big galleta, Anderson wolfberry, and range ratany. Poachie - white bursage, creosotebush, and Joshua tree.

No wetlands occur in the area of the portions of the gas pipeline located on BLM lands. No special status plant species are known from the portions of the gas pipeline located on BLM lands.

The alternative route for the gas pipeline roughly parallels the proposed route. The alternative route is located approximately one-quarter mile to one-half mile north of the proposed route. The same vegetative communities would be crossed by the alternative route as by the proposed route. However, the alternative route would be located in an existing dirt road. As a result, the vegetative community along the roadsides is likely altered because vehicular traffic can import seeds and roadsides are good invasion sites for the imported seeds. Such altered roadside communities would be varied over the length of the road.

No wetlands occur in the area of the portions of the alternative gas pipeline located on BLM lands. No special status plant species are known from the portions of the alternative gas pipeline located on BLM lands.

3.6 WILDLIFE

3.6.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

The proposed gas pipeline would be located within Sonoran creosotebush-bursage scrub habitat type. Wildlife expected to be present is described in Section 3.6 of the DEIS includes big game, predators, small mammals, songbirds, raptors, and reptiles. Due to the limited amount of permanent water resources within the area, the occurrence of aquatic and amphibian species are expected to be minimal.

No species of special concern were observed during the survey of the gas pipeline route, the proposed plant site, water pipeline and well sites, and plant access road. There are three BLM-designated sensitive species (rosy boa, chuckwalla, and Gila monster) and one species designated as sensitive by both the BLM and AGFD (Sonoran desert tortoise) reported from the area. The route crosses both Category II and Category III desert tortoise habitat; the Hualapai Foothills Category II (approximately 6.25 miles) and the Rawhide Mountains/Dutch Flat Category III habitat (approximately 0.5 miles).

The alternative route for the gas pipeline roughly parallels the proposed route. The alternative route is located approximately one-quarter mile to one-half mile north of the proposed route. The same wildlife habitat would be crossed by the alternative route as by the proposed route, including the Category II (approximately 6.44 miles) and Category III (approximately 0.5 miles) desert tortoise habitat.

3.7 CULTURAL RESOURCES

3.7.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

No cultural resources were observed during the reconnaissance survey (Ezzo and Späth 1998) of the portions of gas pipeline on private lands near the plant site, proposed plant site, water pipeline and well site, and plant site access road. Information for the portion of gas pipeline on

BLM land was provided by the records search and literature review, which identified no prior studies or recorded cultural resources.

The archaeological reconnaissance survey (Ezzo and Späth 1998) identified no cultural resources on those portions of the two proposed gas pipelines that fall within the area studied. Since portions of the east-west gas pipeline route on BLM lands cross soils that are identical or highly similar to those of the surveyed area, and vegetation and terrain were closely comparable, there is a low probability for cultural resources to be present. At the east-west gas pipeline's crossing of the BNSF Railroad corridor, there could be cultural resources associated with the railroad. In general, it is concluded that the pipeline routes are likely to contain no cultural resources, and none that are eligible for listing within the National Register of Historic Places.

3.8 LAND USE

3.8.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Land ownership for the western half mile of the pipeline route is private. From the Interstate highway eastward, both of the two alternate gas pipeline routes would be on BLM lands. Area land ownership is shown in Figures 3.8-1a & 1b, 3.8-2a & 2b, and 3.8-3a & 3b of the DEIS.

The amount of the proposed eastern route gas line corridor located on rangelands administered by the BLM is approximately 3.6 miles. The alternative to the eastern route gas line follows an existing 4WD road. Approximately 3.5 miles of the road is located on BLM lands. The portion of these gas pipeline routes on private lands are inside of the new industrial corridor designated by the County.

3.9 RECREATION

3.9.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

There are no developed recreation sites on the approximately 3.6 miles of BLM lands in the pipeline corridor. The primary land use is grazing, although some dispersed recreation uses such as hunting and ORV use do occur.

The alternative pipeline corridor follows a 4-wheel drive road that crosses through BLM lands. There is no significant recreational use of the road, as it is used primarily to access grazing lands.

3.10 VISUAL RESOURCES

3.10.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

BLM lands that would be affected by the pipeline have been classified as Class IV under this system which indicates relatively low visual quality.

3.11 SOCIOECONOMICS

3.11.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

There are no socioeconomic effects from the proposed portions of the gas pipeline located on BLM lands that would affect the environment differently from those described for the entire project in Section 3.11 of the DEIS.

3.12 TRANSPORTATION

3.12.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Current access in the area surrounding the alternate routes of the portions of the gas pipeline located on BLM lands consists of a loop road that extends from the railroad ROW eastward to the base of the Hualapai Mountains. The southern arm of the road arises in Section 7, T19N, R17W, then crosses sections 18, 17, 16, 21, 22, and 15, where it turns northward and intersects the existing El Paso gas line in Section 10. The northern arm of the road arises on Section 6, T19N, R17W, the crosses sections 5, 4, and 3 where it turns south and intersects the existing El Paso gas line in Section 10 and completes the loop road. There are other similar roads in the area but they are farther away from the proposed routes of the portions of the gas pipeline located on BLM lands.

3.13 NOISE

3.13.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

The existing noise generators in the area are Interstate Highway 40 and the BNSF Railroad. The proposed routes are perpendicular to these linear noise sources so noise levels would range from approximately 60 decibels at the west end of the routes to approximately 20 decibels at the east end of the routes.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 GEOLOGY/MINERALS/GEOLOGIC HAZARDS

4.1.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

4.1.1.1 Proposed Project

Construction of the proposed gas supply pipeline would have little impact on the gently sloping topography located in areas to be crossed by the proposed pipelines. The potential for impacts from mass wasting is relatively low because of the area's gentle slopes and location away from large drainages which could be susceptible to flash floods or mud flows.

Although seismic risk in the location is moderate, historically there have been no large earthquakes close enough to the area to cause significant damage. The thick alluvial deposits along the routes should prove relatively stable during a small to moderate seismic event. Pipeline design would take local seismic risk into consideration to mitigate any potential damage.

4.2 WATER RESOURCES

4.2.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

The proposed pipeline to connect with the existing EPNGC gas line would cross three unnamed washes and no 100-year floodplains. Clearing and grading activities for the gas pipeline construction would temporarily expose soils to erosional forces until revegetation of the site occurs. Increased erosion would result in soil loss which could increase sediment in storm runoff. Erosion prior to revegetation would be controlled through various soil stabilization procedures and silt control devices.

Hydrostatic testing of this pipeline prior to use would result in brief, low volume discharges, which would either be routed to the brine disposal pond or would infiltrate into the ground within 1,500 feet of the discharge point if discharged on the land surface. There would be no impact on the groundwater quantity expected as a result of the discharge because of the quality of the water used for the test and depth to groundwater in the area.

During construction of the pipeline, the storage and use of fuel, lubricants, and other fluids could create a potential contamination hazard. This impact would be minimized or avoided by restricting the location of refueling activities and by requiring immediate clean-up of spills and leaks of hazardous materials.

4.3 AIR QUALITY

4.3.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Construction of the proposed gas line would contribute fugitive dust from construction activities. Best Management Practices (BMPs) explained in Table 2.1-4 of the DEIS would be implemented to control blowing dust during the construction period. Potential effects from these emissions would be negligible because the source would be mobile, linear, and short-term.

4.4 SOILS

4.4.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

An increase in soil erosion may be associated with construction of the gas supply pipeline. During clearing and installation of the proposed gas pipeline, the disturbed areas within the right-of-way could be subject to wind and water erosion because of the removal of protective vegetation, disturbance of shallow soils on steeper slopes, and/or creation of graded cut-and-fill areas. Implementation of erosion control measures during construction would minimize effects of soil disturbance on soil productivity. Best Management Practices (BMPs) explained in Table 2.1-4 of the DEIS would be implemented to control blowing dust during the construction period.

A loss of soil productivity would result from mixing the topsoil and subsoil layers during construction. Compaction of soils from construction equipment would inhibit natural revegetation. The potential for soil contamination from hazardous materials and petroleum products would increase during construction.

Although most project area soils are not highly susceptible to water and wind erosion, it could take several years to reestablish a protective cover of vegetation on disturbed soils. Low rainfall in the area combined with the low productivity and excessive gravel content of these soils would make reclamation difficult without use of soil amendments and intensive management. Until vegetation is reestablished, use of erosion control measures such as mulching, silt fences, and staked hay bales can substantially reduce water erosion problems.

4.5 VEGETATION

4.5.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

The area of disturbance would be restricted to the location of the temporary access road and pipeline right-of-way. The Sonoran creosotebush-bursage-desert scrub community is resilient and construction of a linear feature like a pipeline leaves a scar through the vegetation but does not significantly alter the community functions of growth and reproduction. Construction of the gas supply pipeline would result in the direct and long-term loss of about 21 acres of Sonoran desert scrub habitat. The loss of approximately 21 acres from thousands of acres of similar vegetation is not considered significant.

The alternative pipeline route would be located within one-half mile north of the proposed route. The same vegetation communities would be disturbed as by the proposed route. Slightly more

area would be disturbed by the alternative route as it is a slightly longer route by approximately 0.1 mile. However, disturbance to vegetative communities would be less than for the proposed route because some of the construction would be in the existing roadway. All construction would not be in the road, but a reasonable assumption could place half the disturbance in the roadway over a distance of approximately 15,000 feet. A comparison of disturbance by the two pipeline routes could then be as follows:

Table 4.5-1. Comparison of Gas Supply Pipeline Routes

Element	Proposed Pipeline	Alternative Pipeline
Length (feet)	20,250	20,625
Total acres (50 ft. ROW)	23.2	23.7
Acres on public land	20.2	19.2
Soils	4 units	Same
Vegetation disturbance*	23.2 acres	15.0 acres
Reclaimed acres	23.2	15.0
TES Plant potential	Low	Low
TES Animal potential**	High	High

* Assumes half the construction disturbance would be in the existing road for 15,000 feet.
** Both routes pass through Category II and Category III Sonoran desert tortoise habitat.

4.6 WILDLIFE

4.6.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Long-term impacts include the habitat loss of approximately 23 acres for the proposed gas supply pipeline. Since all of the habitats encountered within the Project area are widely distributed in the region, loss of this habitat is not expected to adversely affect the viability of any species. Riparian and wetland areas, which exhibit the greatest abundance of diversity within the desert communities, would not be impacted.

The construction and operation of the gas pipeline are expected to have only minor adverse impacts on federal and/or state listed species of special concern. Site reconnaissance and subsequent studies revealed no areas of suitable habitat or known locations or occurrences of federal or state listed threatened and endangered species within the Project area. Three BLM sensitive species (rosy boa, chuckwalla, and Gila monster) and one BLM and AGFD sensitive species (Sonoran Desert tortoise) have the potential to occur within the pipeline disturbance area. Desert tortoise habitat (both Category II and III) would be crossed by the pipeline route. Potential impacts would be similar for all four of these species as they utilize similar habitats.

All four of these sensitive species have a moderate to high potential for occurrence within the area. Habitat requirements for the Sonoran desert tortoise range from marginal to high quality along the proposed pipeline route. Based on the observations of lack of suitable habitat and

existing land use conditions, populations or individuals of sensitive species are unlikely to occur within the pipeline ROW. However, the higher quality habitat and higher potential for encountering desert tortoise individuals (as well as the other sensitive species) is located along the eastern end of the pipeline where the route approaches the Hualapai Mountain foothills. In general, the habitats encountered within the Project Area are widely distributed in the region.

Even though impacts are not expected to be significant, Griffith Energy would implement the following mitigation measures for wildlife. These measures would also benefit the rosy boa, chuckwalla, and the Gila monster.

- The applicant plans to survey the pipeline ROW within all areas of potential desert tortoise habitat and their burrows within 48 hours prior to onset of surface-disturbing activities. The surveys would be conducted by a competent desert tortoise biologist who is certified in USFWS survey methodology and a qualified tortoise handler. The biologist would survey the proposed route immediately in advance of construction equipment and remove active and/or hibernating tortoise and move them to another burrow or den outside the construction ROW.

- A qualified biologist would be responsible for developing and implementing a worker education program to inform, educate, and properly identify any species of special concern.

- Compensation of designated BLM tortoise habitat areas would be provided by the direct purchase of privately owned desert tortoise habitat for transfer to conservation management or the direct payment of funds to an appropriate land management agency or entity for purchase of tortoise habitat or other tortoise management actions. The compensation formula would be developed by the applicant in accordance with input from the corresponding agencies.

- Specific seeding rates and approved seed mixtures would be developed on a site-specific basis in consultation with appropriate agency or landowner.

- Additional tortoise mitigation measures are provided in Chapter 2 of the DEIS.

The alternative pipeline route would parallel the proposed route, would pass through the same habitat types, and would experience potential impacts very similar to the proposed route. A comparison of the two routes was presented in **Table 4.5-1**. In several cases, differences between the two routes vary by less than five percent. Even though the alternative route is approximately 400 feet longer than the proposed route, the distances within Category II and Category III Sonoran desert tortoise habitat are essentially the same. Mitigation measures for wildlife would also be implemented for the alternative pipeline route, as described for the proposed route.

4.7 CULTURAL RESOURCES

4.7.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Reconnaissance archaeological surveys of the power plant site, portions of the gas pipeline on private lands near the plant (Ezzo and Späth 1998), observed no cultural resources. The areas on BLM lands are expected to contain few if any cultural resources, and none that are eligible for listing within the National Register of Historic Places. Accordingly, no significant impacts to cultural properties are predicted to occur from clearing and grubbing, and pipeline installation/construction.

The pipeline's crossing of the BNSF Railroad corridor could potentially affect historic resources that might be present at that location. However, it is probable that the pipeline would be bored under the railway which, depending upon design, could avoid all cultural resource impacts.

4.8 LAND USE AND RECREATION

4.8.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Easements for the pipeline and temporary access road on private lands would be negotiated with the land owners, and ROW for the portion of the east-west pipeline on federal land would be secured from the BLM.

There would be no impacts on existing land zoning status from the construction of the gas supply pipeline because it would be located within the I-40 Industrial Corridor that has been designated for industrial development. Industrial land uses are also compatible with Mohave County's previously planned land uses for rural development in this area. The existing land use of the area (grazing) would be displaced over the construction of the project.

During the construction phase of the gas pipeline, public access would be temporarily disrupted at some locations. Short-term disruption during construction from the physical intrusion of the crew and equipment, the generation of dust and noise, and the obstruction of traffic is not expected to affect area residents because none are located near the proposed site.

Recreation activities are minimal along the proposed pipeline corridor. Hunting and other dispersed recreational activities likely do not occur in the corridors because of the proximity to grazing operations and the Interstate 40 corridor. Therefore, there would be minimal short- or long-term impacts to recreation from construction and none from the operation of the pipeline.

4.9 VISUAL RESOURCES

4.9.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Impacts to the visual resources of the Project area from the construction of the gas supply pipeline would occur as short-term disturbance of the landscape by project construction activities, and as the long-term addition of a pipeline corridor to the landscape. These effects result from changes to the physical setting and visual quality of the landscape and how the

landscape is experienced from sensitive viewpoints including travel routes, residences, and wilderness areas. The proposed pipeline would introduce a new long-term linear element into the landscape that would alter the existing line, color, and texture of the existing landscape.

The existing vegetation along the pipeline corridor is primarily desert shrub community. Once the pipeline is installed and the land within the ROW is reclaimed, the visual impact resulting from construction would continue until vegetation has been reestablished on disturbed areas. In this environment, that would take many years. The portion of the gas supply pipeline on BLM lands is designated as Visual Resource Management (VRM) Class IV. Class IV objectives provide for major modification of the landscape, and allow management activities to dominate the landscape. The construction and operation of the gas pipeline would be consistent with VRM Class IV objectives because once the line is installed and the ROW reclaimed, the gas pipeline ROW, while visible, would not be a prominent feature in the landscape.

Long-term visual impacts resulting from the installation and operation of the pipeline would be minimized by implementing mitigation including clearing edges of the pipeline corridor irregularly to give a natural appearance and revegetation.

4.10 SOCIOECONOMICS

4.10.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Labor, Employment and Local Economy

Construction of the proposed gas pipeline is anticipated to occur over an approximately 3-month period and would require a variety of tradesmen and contractors. The construction workforce would range from eight to twelve and would include both skilled and non-skilled workers.

It is anticipated that the majority of the required skilled labor would be provided by the pipeline contractor selected to construct the project. Non-skilled labor could be provided by those available in the Kingman/Yucca/Havasu area.

The construction crew members that come from outside the area would stay only for the short construction time frame. These construction workers would use temporary housing such as motels or weekly rentals. Since the project site is located approximately 15 miles from the community of Kingman, some workers may also be accommodated in personal trailers or motor homes.

Potential impacts to public services during construction could result from construction related demands for police, fire, medical and other emergency services. It is not expected that these effects would be significant, with the implementation of standard construction health and safety measures.

Some solid wastes would be generated by construction, but the amount of wastes generated are expected to be too small to affect the life expectancy of the two municipal solid waste facilities currently operated by Mohave County.

4.11 TRANSPORTATION

4.11.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Impacts on transportation for the construction of the gas pipeline would be short-term. Traffic effects related to the project include daily commuting by construction employees and other construction-related delivery traffic as well as the temporary disruption of traffic on two lightly used roads.

During pipeline construction, materials would arrive via truck and would be delivered to the proposed project site via existing access roads. A staging/lay down area may be constructed at the Power Plant site as well as at the rail siding along the pipeline ROW. Traffic on the two unpaved roads crossed by the pipeline (one paralleling the railroad and one paralleling the EPNGC supply line) would be disrupted for the very short time when crossed by the construction crews.

4.12 NOISE

4.12.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

Noise during the construction phase would result from the operation of construction equipment and vehicles. Not all construction equipment would operate continuously so an average construction site noise level is assumed to be less than 85 dBA. The noise levels emanating from the construction site of various construction equipment are shown in Table 4.12-1 in the DEIS along with the expected noise levels at various distances from the equipment.

Using the noise propagation formulation, noise levels would fall below 55 dBA, a noise level established by the EPA as the maximum noise level that does not adversely affect public health and welfare, at approximately 1500 feet from the construction activities. The nearest residence would be approximately 3.5 miles northwest of the construction site. The noise at this location produced by construction activities would be 36.5 dBA, a level consistent with the general noise of a rural background and lower than the average noise of 44.5 dBA produced by Interstate 40 traffic. It is expected that most construction would occur during daylight hours so nighttime noise levels would remain at existing levels with the Interstate-40 and the occasional train being the predominant noise sources.

4.13 HEALTH AND SAFETY

4.13.1 PORTIONS OF THE GAS PIPELINE LOCATED ON BLM LANDS

The pipeline construction contractor would implement a comprehensive occupational safety and health program to optimize minimize safe and healthy working conditions during all phases of construction. The program would meet or exceed all federal, state, and local requirements.

Hazardous materials anticipated to be on-site during construction are equipment fuels (gasoline and diesel), lubricants, and solvents. These materials would be handled according to standard safety precautions and manufacturer's specifications for use, where appropriate.

During operation, pipe, valves, or connections could fail resulting in the release of gas ranging from minor leaks to rupture. However, such failures in containing the gas would be greatly reduced through construction in accordance with the requirements of the U.S. Department of Transportation for natural gas pipeline construction and operation. Industry standards of valving and emergency shut-off controls and procedures would be used and maintained. A monitoring program for detecting leaks for the natural gas supply facilities would be implemented and continued in adherence to an approved schedule for the life of the Project. Also the line would be marked to minimize the potential for accidental damage from future construction activities.

APPENDIX BF
VISUAL CONTRAST RATING WORKSHEETS

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 3-17-99

District Phoenix

Resource Area Kingman RA

Activity (program) Power Plant

SECTION A. PROJECT INFORMATION

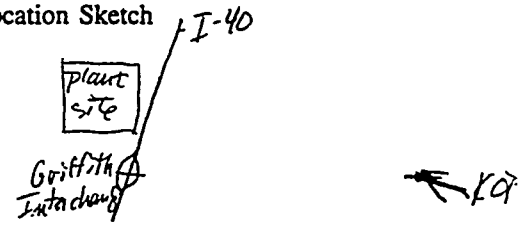
1. Project Name
Griffith Energy Power Plant

2. Key Observation Point
#1 Wabayuma Wilderness

3. VRM Class
NA

4. Location
Township 19N
Range 17W
Section 6

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat terrain	Indistinct amorphous	---
LINE	Horizontal/Diagonal	Weak	---
COLOR	Medium to light tans	medium grey-green, uniform due to distance	---
TEXTURE	Fine to smooth	fine to smooth	---

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat	indisticts	geometric, rectangular
LINE	Horizontal	weak	weak geometric
COLOR	Tan	Uniform green	Tan
TEXTURE	Fine	Fine	Medium

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X				X				X	
Line			X				X				X	
Color			X				X				X	
Texture			X				X				X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names: Lisa Welch

Date: 8-25-98

The plant site is below the observor position, and is blocked by the intervening topography.

SECTION D. (Continued)

Comments from item 2.

KOP 1 is within the Wabayuma Wildernes, 5.5 miles from the plant site. At this distance, the plant site appears indistinct. The terrain is a flat horizontal area back dropped by the Black Mountains. The textures of vegetation and land forms are not visible at 5.5 miles from the KOP. The proposed plant will not be visible from the KOP because of the distance and because the plant is in the Sacramento Valley below the middle horizon as seen from the KOP. The plant will be on privately owned lands. BLM does not manage visual resources on private lands. The plant is on private lands and not managed with BLM's VRM objectives.

Additional Mitigating Measures (See item 3)

The plant will not be visible from any viewpoint in the wilderness, because the buildings will be painted with tan colors that blend with the surrounding.

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orm 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 3-17-99

District Phoenix

Resource Area Kingman

Activity (program) Power Plant

SECTION A. PROJECT INFORMATION

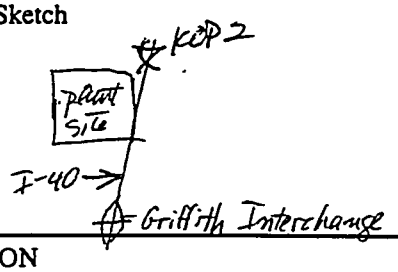
1. Project Name
Griffith Energy Power Plant

2. Key Observation Point
2

3. VRM Class
na

4. Location
Township 19N
Range 17W
Section 6

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat foreground rolling to rugged background	rough, irregular circular	verticle, linear parallel
LINE	plant site - horizontal backdrop - diagonal, rugged	simple-foreground weak - background	perpendicular, verticle fence pols
COLOR	light tan	medium to light green, gold	dark brown
TEXTURE	patchy and fine - foreground rough, contrasty background	patchy, rough foreground stippled to uniform	Medium background

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat	rough, irregular	prominent, rectangular, blocky plant buildings
LINE	horizontal	simple	strong, perpendicular, geometric
COLOR	light tan	medium to light green, gold	tan
TEXTURE	fine	patchy, rough	rough

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
ELEMENTS	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form		X				X			X			
Line		X				X			X			
Color		X				X						
Texture		X				X			X			

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No
(Explain on reverse side) na

3. Additional mitigating measures recommended
☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names: Lisa Welch

Date: 8-25-98

SECTION D. (Continued)

Comments from item 2.

The plant buildings will impose prominent, rectangular forms on the flat, horizontal topography. The power plant will dominate the landscape as viewed from KOP2.

Plant site is on private lands that are not managed with BLM>s VRM objectives.

Additional Mitigating Measures (See item 3)

The plant will be painted with tan desart colors that harmonize with the landscape.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 3-17-99

District Phoenix

Resource Area Kingman

Activity (program). Power Plant

SECTION A. PROJECT INFORMATION

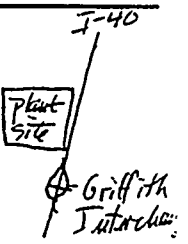
1. Project Name
Griffith Energy - Power plant

2. Key Observation Point
#3 - Warm Springs Wilderness

3. VRM Class
na

4. Location
Township 19N
Range 17W
Section 6

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat terrain	indistinct, smooth (due to distance)	small, indistinct, blocky rectangular (Praxair facility)
LINE	horizontal	weak	geometric
COLOR	medium to light tans	medium grey-green due to distance	white
TEXTURE	fine	fine	fine

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat	indistinct	small, indistinct due to distance, blocky & rectangular
LINE	horizontal	weak	geometric
COLOR	medium to light tans	medium	tan
TEXTURE	fine	fine	fine

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form			X				X				X	
Line			X				X				X	
Color			X				X				X	
Texture			X				X				X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No (Explain on reverse side) na

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names: Lisa Welch

Date: 8-25-98

SECTION D. (Continued)

Comments from item 2.

KOP 3 is in the Warm Springs Wilderness Area more than 5 miles west of the plant site. The existing Praxair facility is located at approximately the same distance from the KOP as the proposed plant. The Praxair facility is barely visible from the KOP, indicating that the plant will have a similar low visiblity. The plant site is on private lands that are not managed with BLM's VRM objectives.

Additional Mitigating Measures (See item 3)

The plant will be painted desert tan colors that harmonize with the landscape. The plant will be more difficult to see from KOP3 than the nearly white-painted praxair plant.

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VISUAL CONTRAST RATING WORKSHEET

Date 3-17-99

District Phoenix

Resource Area Kingman

Activity (program) Transmission Line - Segment C

SECTION A. PROJECT INFORMATION

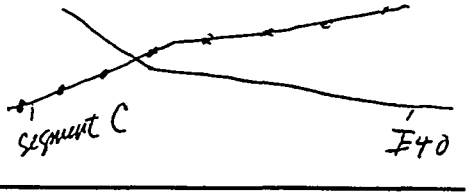
1. Project Name
Griffith Energy Transmission Line

2. Key Observation Point
#4

3. VRM Class
III

4. Location
Township 21N
Range 16W
Section 13

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat foreground-midgrd linear smooth road contrasts with rough land & veg forms	irregular, patchy veg. forms	linear, verticle existing pole structures
LINE	flat, horizontal road is straight	irregular, undulating	linear, perpendicular angular
COLOR	medium to light tan dark grey road	dark to light greens gold	grey
TEX-TURE	smooth to medium	medium grained random	sparse, ordered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat linear road, smooth to angular land forms	irregular, patchy	linear, vertical
LINE	flat, horizontal	undulating	linear, angular, parallel to existing poles
COLOR	medium-light tan dark grey road	dark-light greens gold	grey
TEX-TURE	smooth - medium	random, medium	sparse, ordered

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form		X				X				X		
Line	X									X		
Color		X								X		
Texture		X									X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☒ No (Explain on reverse side)

Evaluator's Names: Lisa Welch

Date: 8-25-98

SECTION D. (Continued)

Comments from item 2.

New pole structures will be located adjacent to existing structures. The existing pole structures do not dominate the landscape because most viewers are traveling on the highway and view the structures for only a few minutes. The new line will be an additive impact.

Additional Mitigating Measures (See item 3)

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VISUAL CONTRAST RATING WORKSHEET

Date 3-17-99

District Phoenix

Resource Area Kingman

Activity (program). Transmission Line

SECTION A. PROJECT INFORMATION

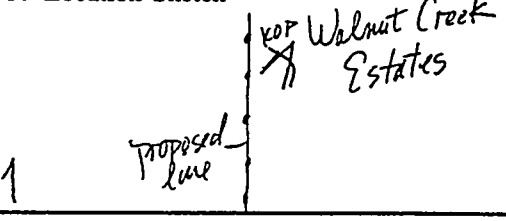
1. Project Name
Griffith Energy - Transmission Line

2. Key Observation Point
#5

3. VRM Class
na

4. Location
Township 20N
Range 17W
Section 7

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat to rugged	irregular, patchy	angular
LINE	horizontal foreground diagon/horiz-background	undulating	verticle fence posts
COLOR	light tan, brown	med to light green, golds, buff	dark brown
TEXTURE	medium to coarse, contrasting	continuous, stippled background;irregular, clumped fine to coarse	regular, directional

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat to angular	irregular, patchy	linear, verticle
LINE	horizontal, diagonal	indulating	linear, angular, directional
COLOR	light tan, brown	green, gold	grey
TEXTURE	coarse, contrasting	stippled background, fine to coarse, clumped foreground	coarse, ordered

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form		X				X				X		
Line	X					X			X			
Color		X					X			X		
Texture		X					X				X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No
(Explain on reverse side) na

3. Additional mitigating measures recommended
☐ Yes ☒ No (Explain on reverse side)

Evaluator's Names: Lisa Welch

Date: 8-25-98

SECTION D. (Continued)

Comments from item 2.

The view is to the South from Walnut Creek Estates. The low ridge in the middleground obstructs views of the plant. The proposed transmission line is on private land that is not managed with the VRM system.

Additional Mitigating Measures (See item 3)

None

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VISUAL CONTRAST RATING WORKSHEET

Date 3-17-99

District Phoenix

Resource Area Kingman

Activity (program) Transmission Line

SECTION A. PROJECT INFORMATION

1. Project Name
Griffith Energy EIS

2. Key Observation Point
6

3. VRM Class
NA

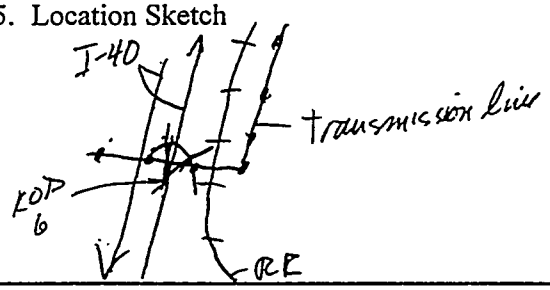
4. Location

Township 20N

Range 17W

Section 19

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat to rugged (background) terrain	irregular, patchy	linear, angular distribution poles, linear, directional road
LINE	horizontal/diagonal	undulating	angular, vertical poles, straight, horizontal road
COLOR	light tan	medium to light green, gray-green, gold	gray, dark brown
TEX-TURE	fine	coarse, random	coarse

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat	patchy	linear, vertical transmission structures
LINE	horizontal	undulating	angular, directional
COLOR	light tan	medium to light green, gray-green, gold	gray,, glow (from steel)
TEX-TURE	fine	coarse	coarse

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form		X				X					X	
Line		X				X					X	
Color		X				X					X	
Texture		X				X					X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No (Explain on reverse side) NA

3. Additional mitigating measures recommended ☐ Yes ☒ No (Explain on reverse side)

Evaluator's Names: Lisa Welch

Date: 10/19/98

SECTION D. (Continued)

Comments from item 2.

The transmission line will add linear features to the landscape. The pole structures are linear, angular structures that are perpendicular to the horizontal land form. The line is also a linear feature that is in foreground at road crossing, and recedes into background. The transmission line is not on BLM lands and is not managed for VRM objectives.

Additional Mitigating Measures (See item 3)

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 3-17-99

District Phoenix

Resource Area Kingman

Activity (program) Transmission Line

SECTION A. PROJECT INFORMATION

1. Project Name
Griffith energy EIS

2. Key Observation Point
7

3. VRM Class
NA

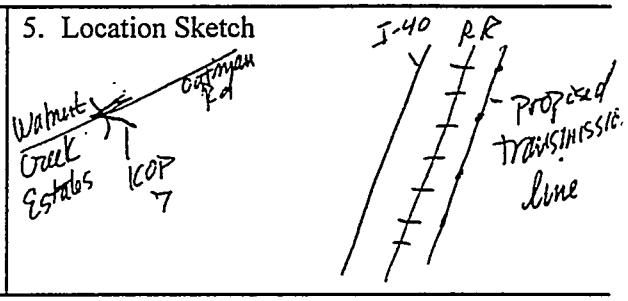
4. Location

Township 20N

Range 17W

Section 8

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat to angular (background) terrain	irregular, patchy	angular, complex
LINE	horizontal foreground, diagonal background	irregular, broken	diagonal/horizontal
COLOR	light tan	medium green, gray-green, golds	white, tan, red, green
TEX-TURE	fine to coarse	coarse, random foreground, smooth to mid background	clumped, contrasty

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat to angular		indistinct, narrow vertical
LINE	horizontal/diagonal		vertical, angular
COLOR	light tan		light grey
TEX-TURE	fine to coarse		fine

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form			X				X				X	
Line			X				X				X	
Color			X				X				X	
Texture			X				X				X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☐ No (Explain on reverse side)

Evaluator's Names: Lisa Welch

Date: 10/16/98

SECTION D. (Continued)

Comments from item 2.

The transmission line (either single pole or lattice structures) will be located between 1-2 miles from the KOP 7. The line will not be noticeable at this distance, and will harmonize with the surrounding rural/industrial landscape. A small portion of the line will be on Class IV BLM lands. BLM objectives will be complied with because the line will be subordinate to the existing landscape.

Additional Mitigating Measures (See item 3)

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APPENDIX CF
ENDANGERED SPECIES CONSULTATION

United States Department of the Interior
Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
(602) 640-2720 Fax (602) 640-2730

In Reply Refer To:

2-21-98-I-227

December 23, 1998

Mr. John Holt
Environmental Manager
Western Area Power Administration
P.O. Box 6457
Phoenix, Arizona 85005-6457

Dear Mr. Holt:

The Fish and Wildlife Service has reviewed your biological assessment (BA) and draft environmental impact statement (DEIS) for the Griffith Power Plant Project in Mohave County, Arizona. Your letter requested our concurrence with findings of "may affect, not likely to adversely affect" for two listed species: the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus anatum*) and the experimental non-essential population of California condor (*Gymnops californianus*).

For the peregrine falcon, the BA and DEIS did not provide survey information regarding potential habitats for this species that would be in the area of effect. Given that no information was provided regarding the suitability of the project area and vicinity for nesting peregrines, the Service is concerned about potentially disturbing activities occurring proximate to occupied and unsurveyed habitat during the breeding season. We can conditionally concur with the finding of "may affect, not likely to adversely affect" given the following:

a) no disturbing activity (i.e. construction activity, use of heavy equipment etc.) will occur within 1/2 mile of known or potential peregrine nesting habitat during the breeding season (March 1 to July 15), or within one mile of such habitat for blasting activity; or

b) all potential peregrine nesting habitat within 1/2 mile of proposed disturbing activities (or one mile for blasting) will be surveyed during the year in which such activities will occur, using the Arizona Game and Fish Department Peregrine Falcon Survey Methodology (Ward 1994. 1994 peregrine falcon survey methods, Nongame Branch, Wildlife Management Division, Arizona Game and Fish Department, Phoenix. 12pp.). If peregrines are located, no disturbing activity will occur within 1/2 mile (one mile for blasting) during the breeding season (March 1 to July 15).

The Service concurs with your finding of "may affect, not likely to adversely affect" for the bald eagle. Bald eagles are unlikely to nest within the project area, but may be present as wintering birds or migrants. There is a remote risk of a bald eagle being injured or killed by a collision with the transmission line, but the risks are insignificant and discountable.

For purposes of section 7 consultation, nonessential experimental populations are treated as species proposed for listing. If an action's effects are significant a formal conference is required. In the case of the Griffith Power Plant Project, the likelihood of effects to California condors is insignificant and discountable. The Service concurs with the finding of "may affect, not likely to adversely affect" for this project. Formal conference is not required.

The Service appreciates the efforts of your agency to implement the terms of the Endangered Species Act . If there are questions regarding this concurrence, please contact Lesley Fitzpatrick or Tom Gatz.

Sincerely,

for David L. Harlow
Field Supervisor

98-227con.wpd:LAF:bl

APPENDIX DF
ENVIRONMENTAL PROTECTION AGENCY LETTER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

January 8, 1999

Mr. John Holt, Environmental Manager
Western Area Power Administration
Desert Southwest Region
P.O. Box 6457
Phoenix, Arizona, 85005

Dear Mr. Holt:

Thank you for meeting with EPA on January 6, 1999 to discuss EPA's environmental objections to the Griffith Energy Project Draft Environmental Impact Statement (DEIS). The purpose of this letter is to provide a meeting summary based on agenda issues, from EPA's perspective, and to list action items necessary for objection resolution. I have followed the draft agenda item format provided by Western, as it generally reflects issues discussed at the meeting.

1. Purpose and Need

We discussed Western's Purpose and Need as it relates to its jurisdiction and mission. It is our understanding that Western must provide transmission access, based on Federal Energy Commission (FERC) orders, assuming that access is consistent with Western's transmission and power marketing mission. EPA recommended revision of, or amplification of, the Purpose and Need statement in the EIS to reflect the underlying project purpose. We suggested that one way to do this would be to discuss the project proponent's purpose and need, separately, and to amplify on the rather narrow scope of Western's Purpose and Need statement in the context of its jurisdiction and mission. Regardless of exact phrasing, the environmental impacts discussed in the DEIS largely describe combined impacts from the proposed power generating facilities and transmission lines on the environment. Since NEPA requires a full and fair discussion of significant environmental impacts, the Purpose and Need statement should not be defined to narrowly, so as to preclude a full discussion of potential project-related environmental impacts.

2. Alternatives

We agree with Western that alternatives to be analyzed in an EIS should be reasonable ones, namely those which are economically and technically feasible. It is the Federal Activities Office's EIS review policy to identify and recommend corrective action for any significant environmental impacts associated with a proposal. At the meeting, we agreed that additional discussion of the potential to use dry cooling tower technology at the proposed project should be included in the Final EIS (FEIS). EPA always encourages consideration of alternatives which would minimize

adverse environmental effects. For the proposed project, significant reduction in the use of water resources, and elimination of a pond with potential toxins, would be consistent with Western's Purpose and Need statement in the DEIS ("to cause the minimum adverse environmental effects consistent with Federal land management policies"). Western has agreed to provide data on projected cooling tower emissions. The projected wet cooling tower emissions could have a bearing on the viability of a dry-cooling system. PM10 emissions from the wet cooling towers should not exceed the PM10 PSD increment. Furthermore, issuance of a PSD permit form the Arizona Department of Environmental Quality (ADEQ), is subject to requirements of Best Available Control Technology (BACT). Prior to dismissing a dry-cooling technology, we recommend that Western review the projected wet cooling tower emissions and their consistency with Clean Air Act regulations and requirements of the PSD permit, and incorporate this information into the FEIS. We also request that EPA be provided a copy of the supplemental air emissions projections, for review, prior to issuance of the FEIS.

3. Merchant Plants and Relationship to Growth

In our meeting, we concluded that Western would amplify its general discussion of merchant plants and their relationship to potential growth. We also request that any information pertaining to the potential of the specific project to induce growth, locally or regionally be included in the FEIS. We recommended that any previous studies, by Western, Department of Energy, FERC, etc., which would help in the discussion, be included by reference. Western agreed to provide additional information about a planned future 230/69 kV transformer and any relationship between the proposed power plant and the identified industrial corridor (including plans or the feasibility of co-generation applications).

4. Consultation and Survey Process

We discussed the intent of NEPA regulations to encourage agencies to complete required surveys and consultations prior to decision making. We agreed that Western should accelerate its cultural properties/archaeologic surveys (per requirements of the National Historic Preservation Act), to the fullest extent possible, and at the least, ensure that screening level surveys have adequately identified any possible sensitive areas that should be avoided. In this way, Western would provide assurance that final project design would not significantly differ from the proposal presented in the FEIS, thus minimizing the possibility for any additional future NEPA compliance requirements. We commend Western for completing its consultation with the Fish and Wildlife Service and concur with Western that these results would be reflected in the FEIS.

5. Clean Water Act, Section 402 Permits

We concluded that while the steam-electric utility sector is considered a New Source, it would be unlikely that an individual National Pollution Discharge Elimination System (NPDES) permit would be required for the project. We asked for additional verification in the FEIS that the proposed project would be a zero discharge facility for storm water, and what the event capacity of the evaporation pond would be. We also noted that the project applicant could apply for a zero discharge NPDES permit. For further information on NPDES permits, the project applicant,

or Western, should contact Laura Gentile of EPA's Water Division at 415-744-1913.

6. Session to address EPA's modeling questions.

We agreed that response to EPA's groundwater modeling questions, impacts to Springs, etc., should follow the format of a draft written response followed up by a conference call. If additional questions remain at that time, we could arrange a further meeting.

We look forward to continuing are work with you. For any questions, clarification of discussion points and omissions/corrections, please don't hesitate to contact us.

Sincerely,

Karl Kanbergs

Karl Kanbergs, Geologist/Environmental Scientist
Federal Activities Office

MI: 003068
cc: Bill Wadsworth, Bureau of Land Management, Kingman, Arizona