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. <u>Desert Tortoise Mitigation Plan</u> 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.	Wildlife

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 60ºF. Local meteorological data shows that the ambient temperature would be above 60ºF 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) (g/m^3)	NAAQS (g/m^3)	Percent of NAAQS (%)	Class II Increment (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"

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 merriam*i)
3.6 Wildlife	3-28	Paragraph 5	Line 5	Delete "mesquite mouse (*Peromyscus merriam*i)" 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"

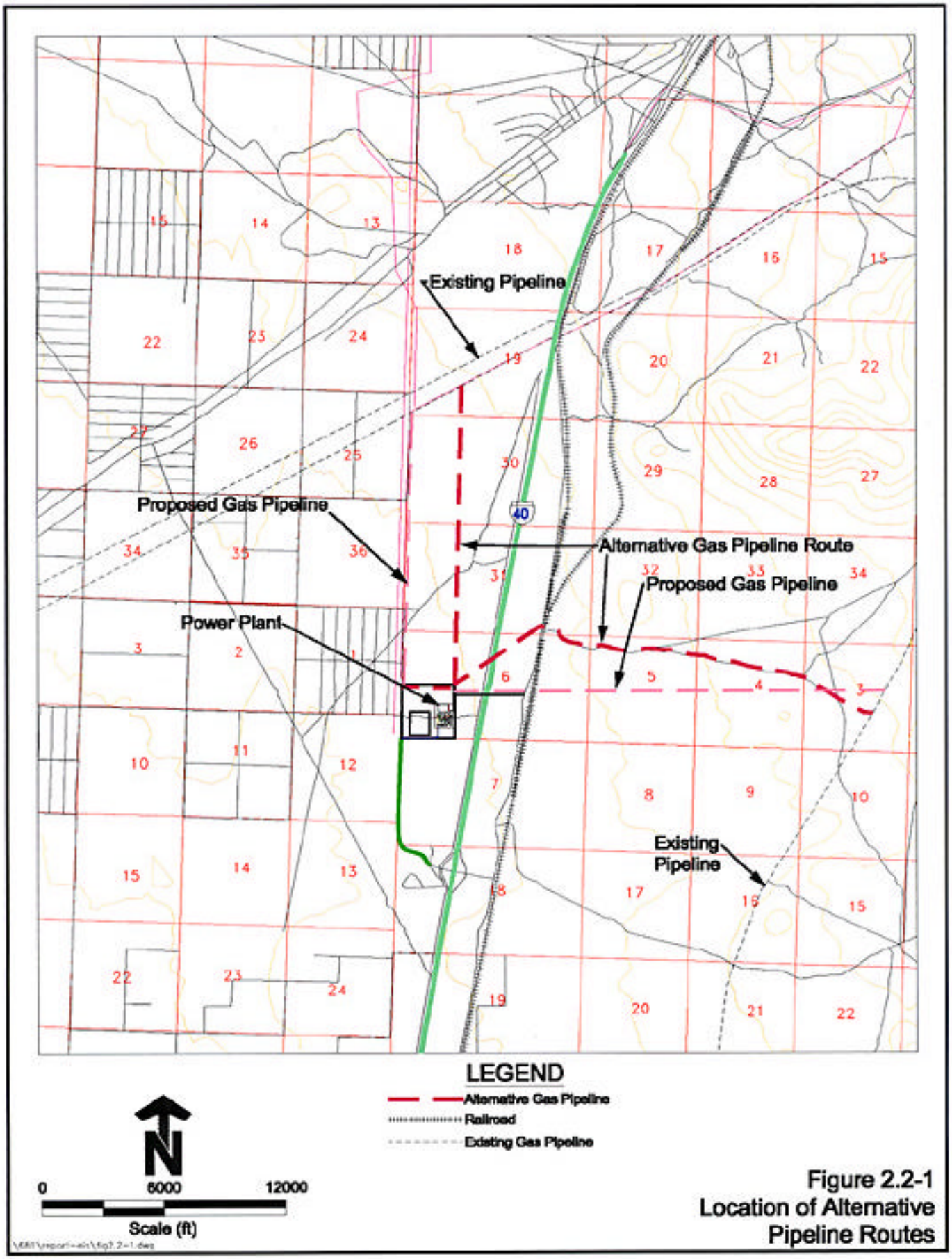


Figure 2.2-1
Location of Alternative Pipeline Routes

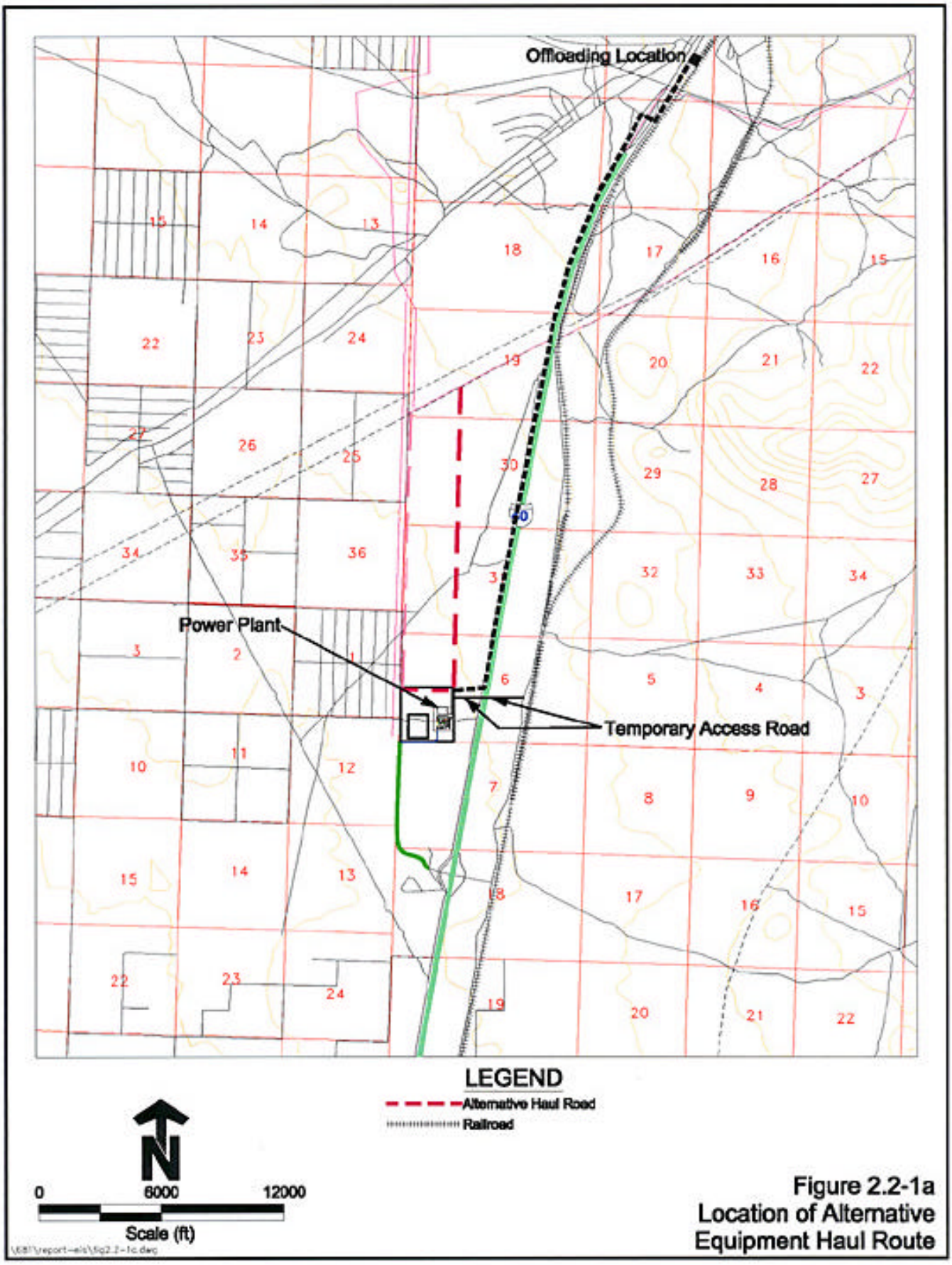
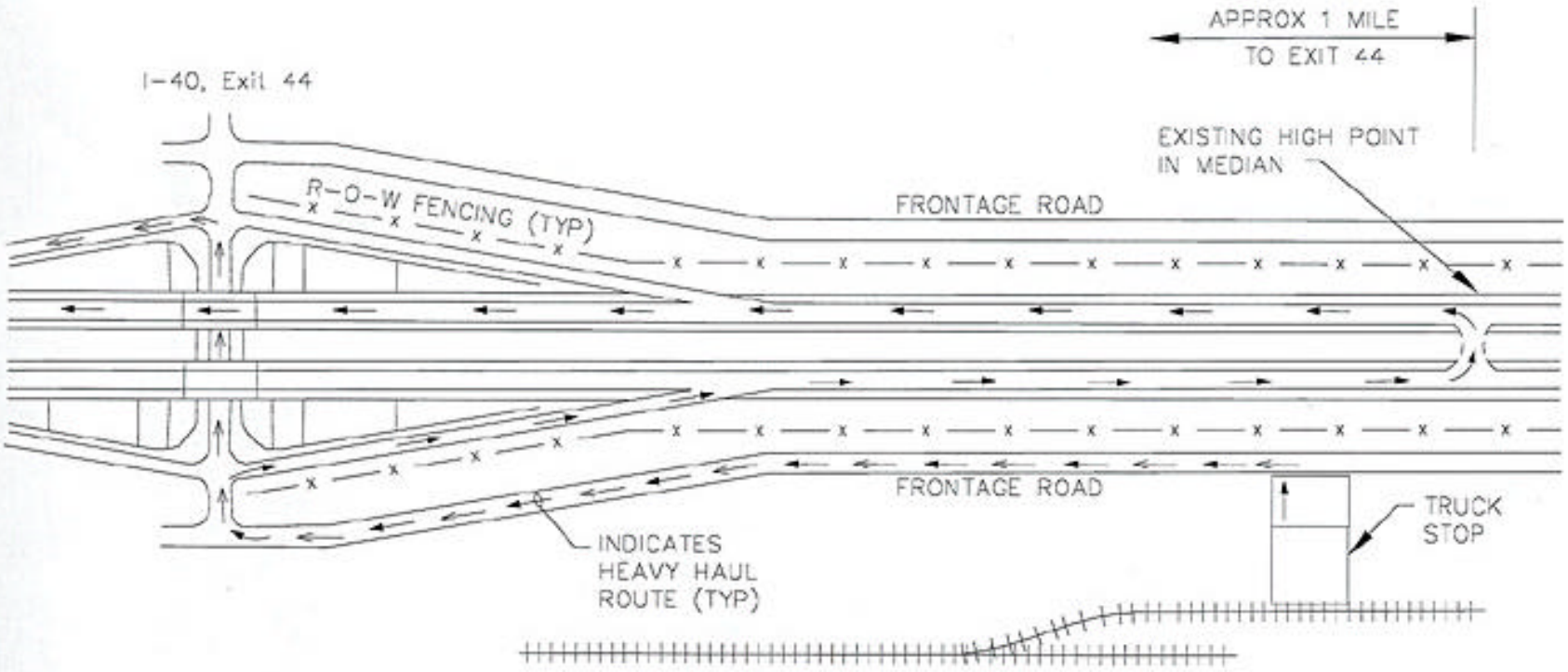


Figure 2.2-1a
Location of Alternative
Equipment Haul Route



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

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

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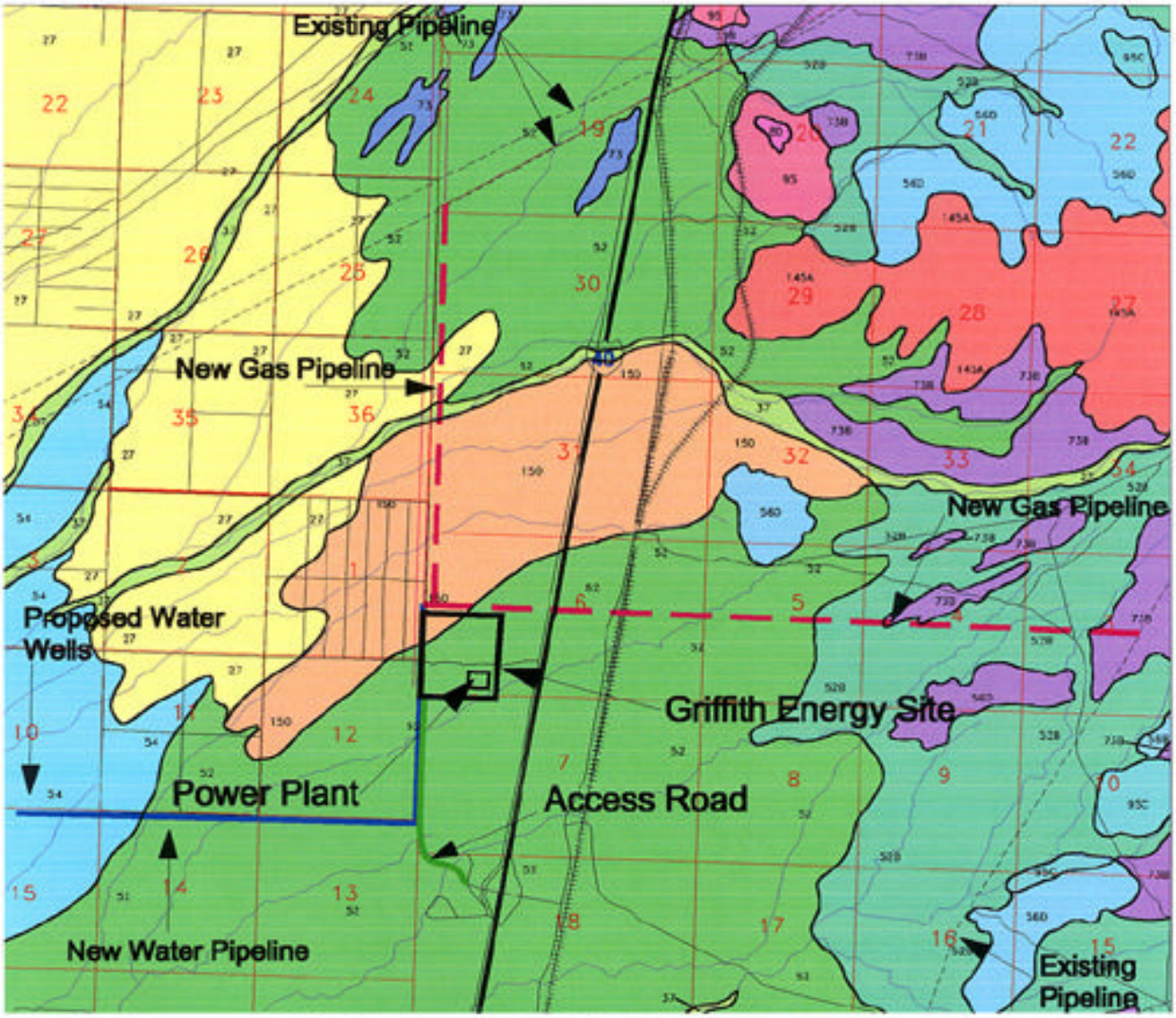

LEGEND

- 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 Arizo-Franconia-Riverwash complex, dry, 1 to 3 percent slopes.
- 52 Castaneda extremely gravelly loam, dry, 1 to 7 percent slopes.
- 529 Castaneda extremely gravelly loam, 1 to 7 percent slopes.
- 548 Orwash sandy loam, dry, 1 to 3 percent slopes.
- 560 Wildcup-Rock outcrop complex, 20 to 60 percent slopes.
- 738 Goodsprings gravelly sandy loam, dry, 1 to 15 percent slopes.
- 738 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

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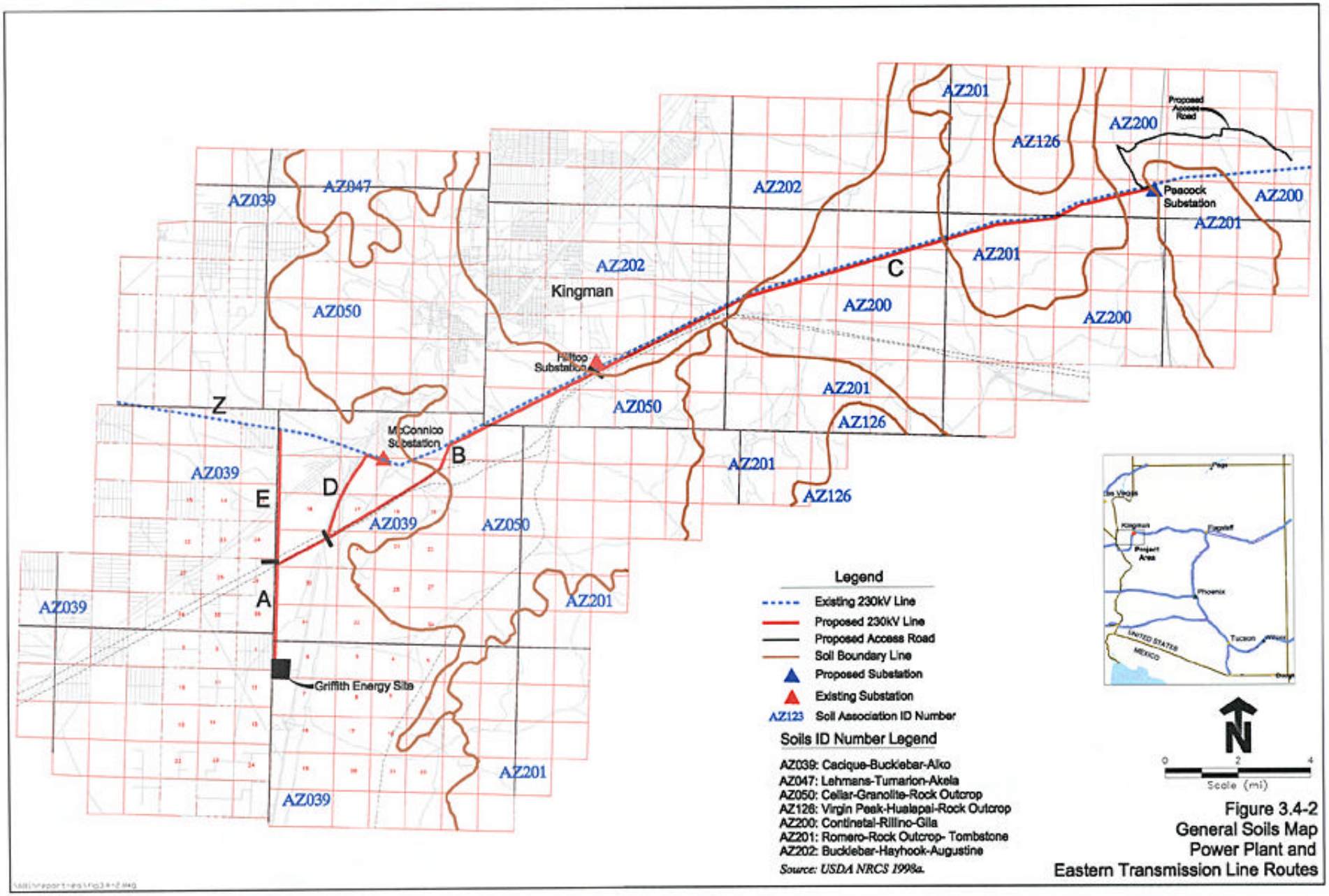

Figure 3.4-2
General Soils Map
Power Plant and
Eastern Transmission Line Routes

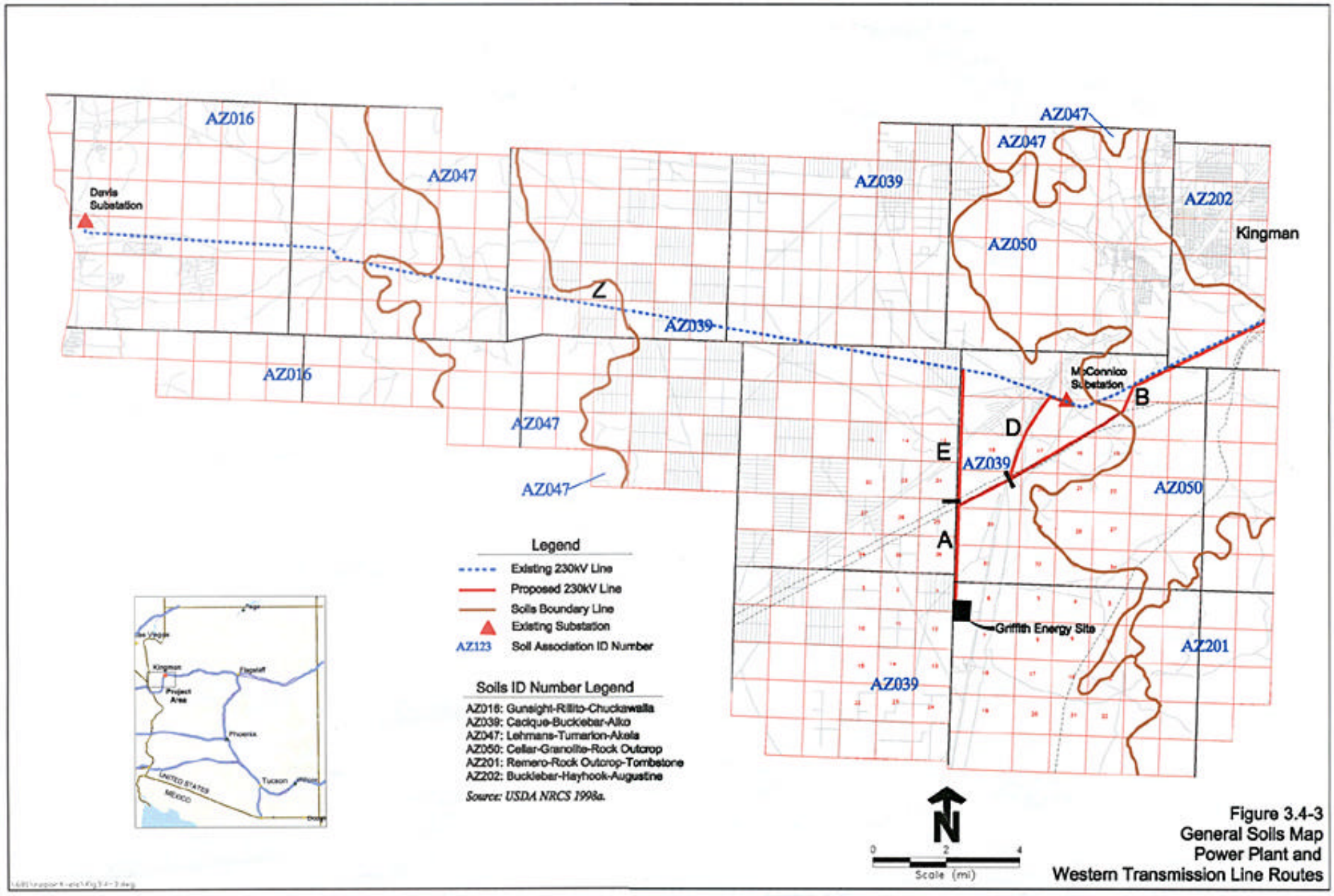

Figure 3.4-3
General Soils Map
Power Plant and
Western Transmission Line Routes

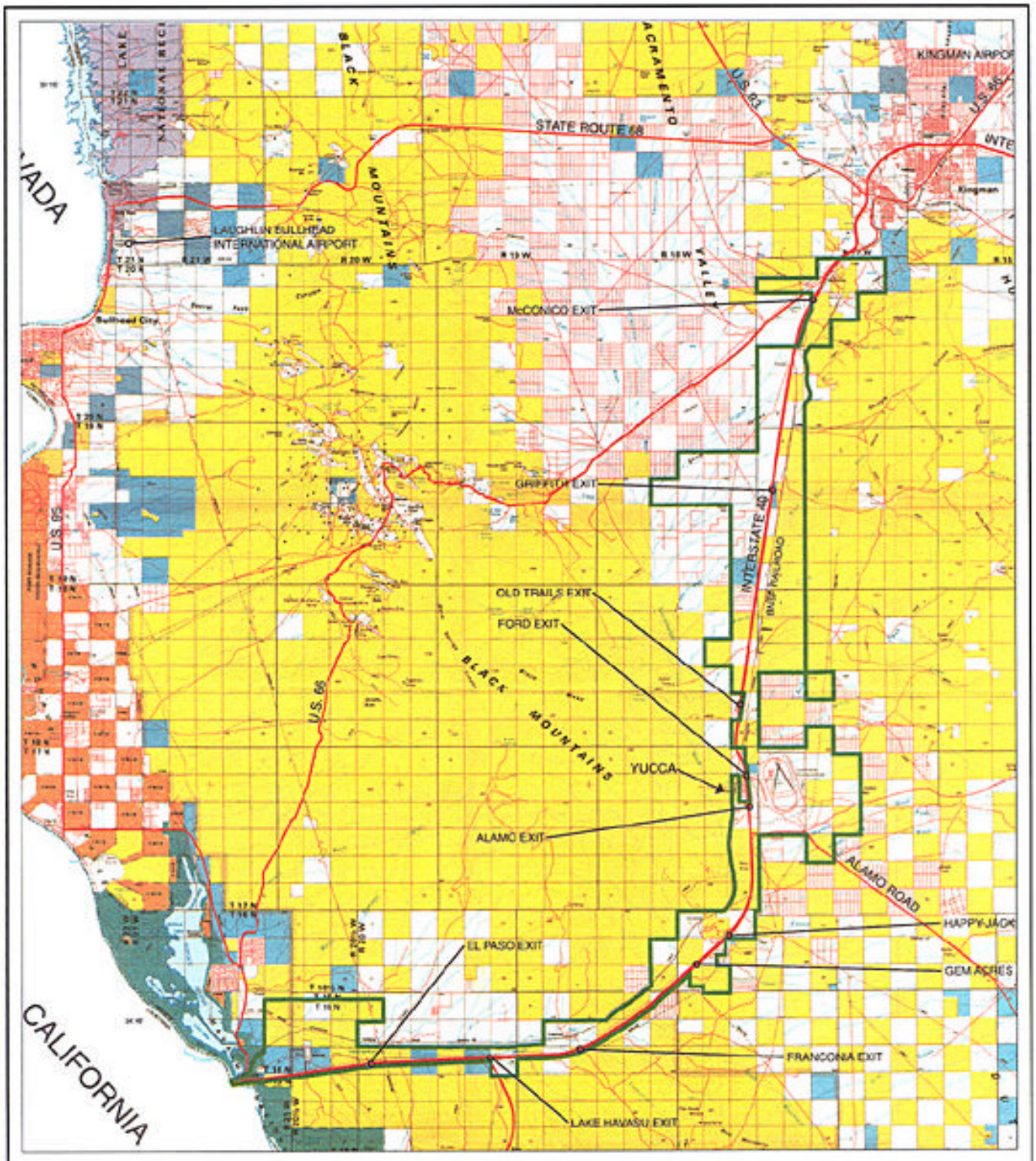

Figure 3.8-2c
Location and Extent of I-40 Industrial Corridor

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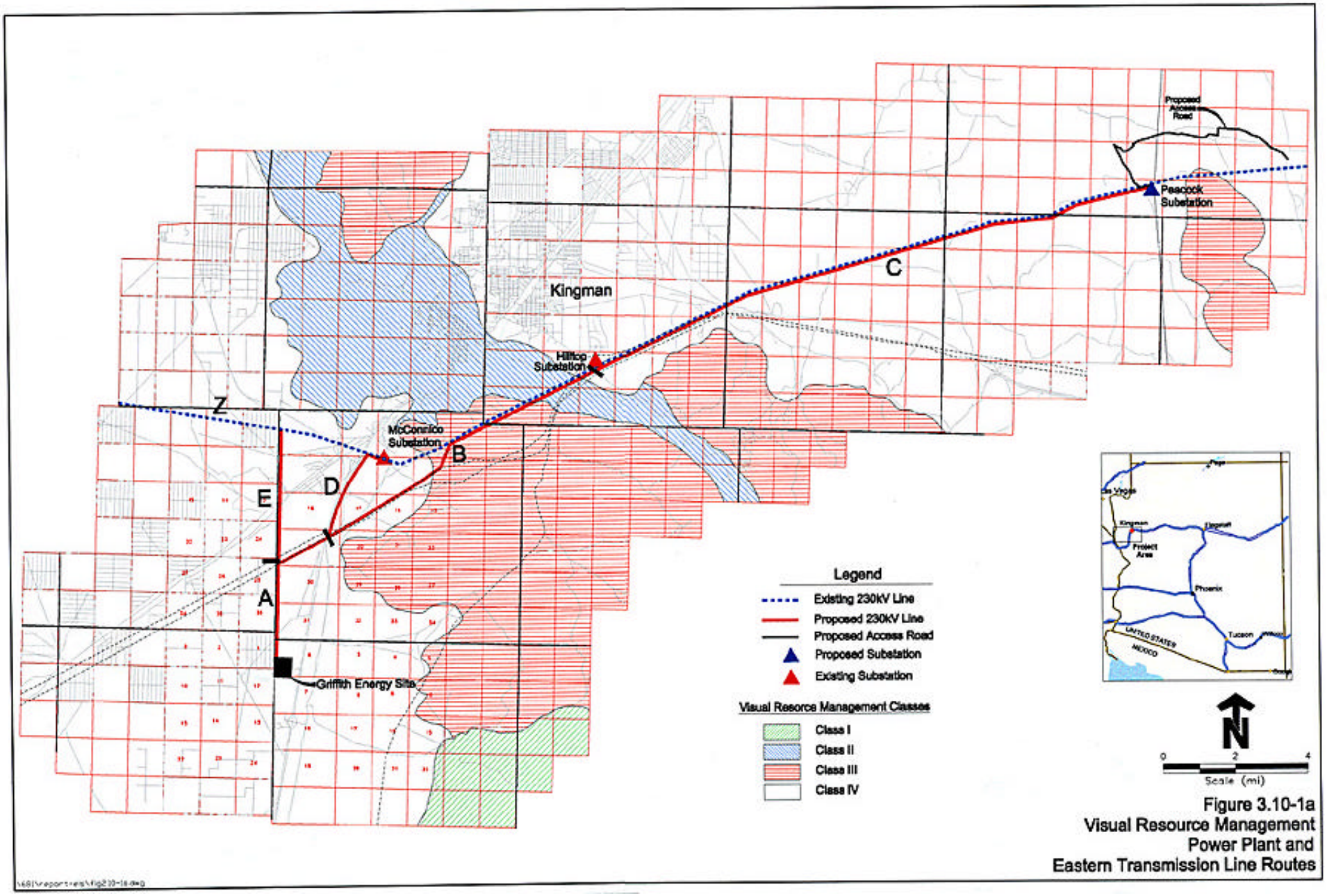


Figure 3.10-1a
Visual Resource Management
Power Plant and
Eastern Transmission Line Routes

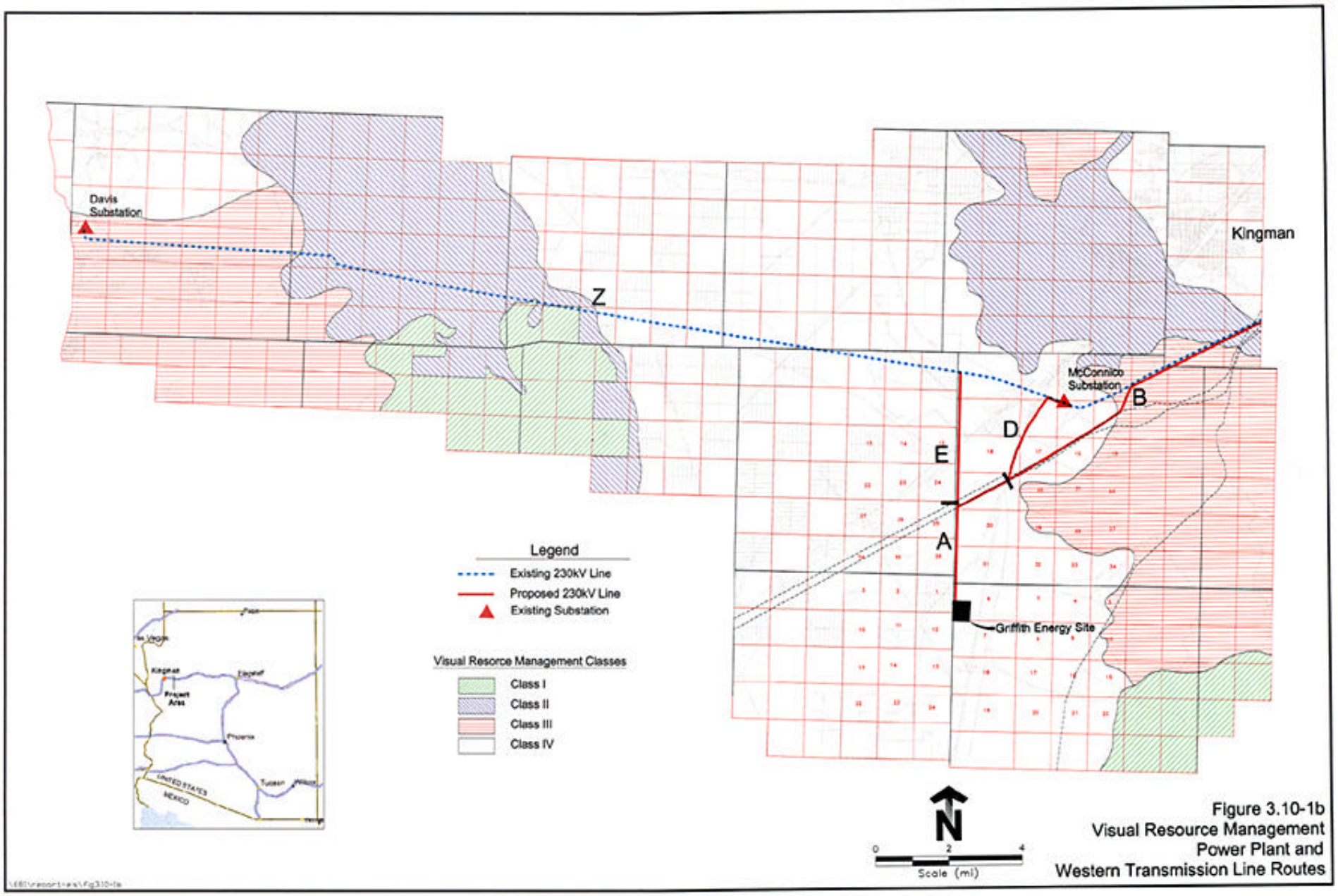
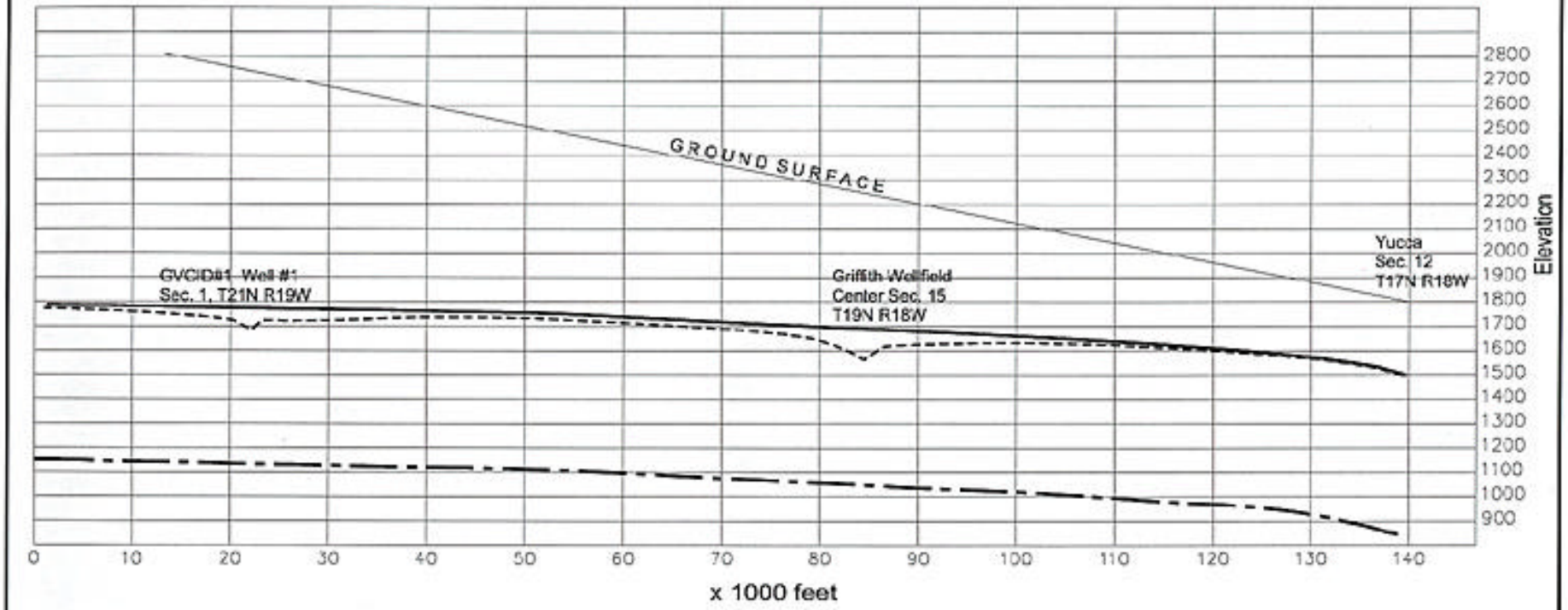


Figure 3.10-1b
Visual Resource Management
Power Plant and
Western Transmission Line Routes



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

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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 lline 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

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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

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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.

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

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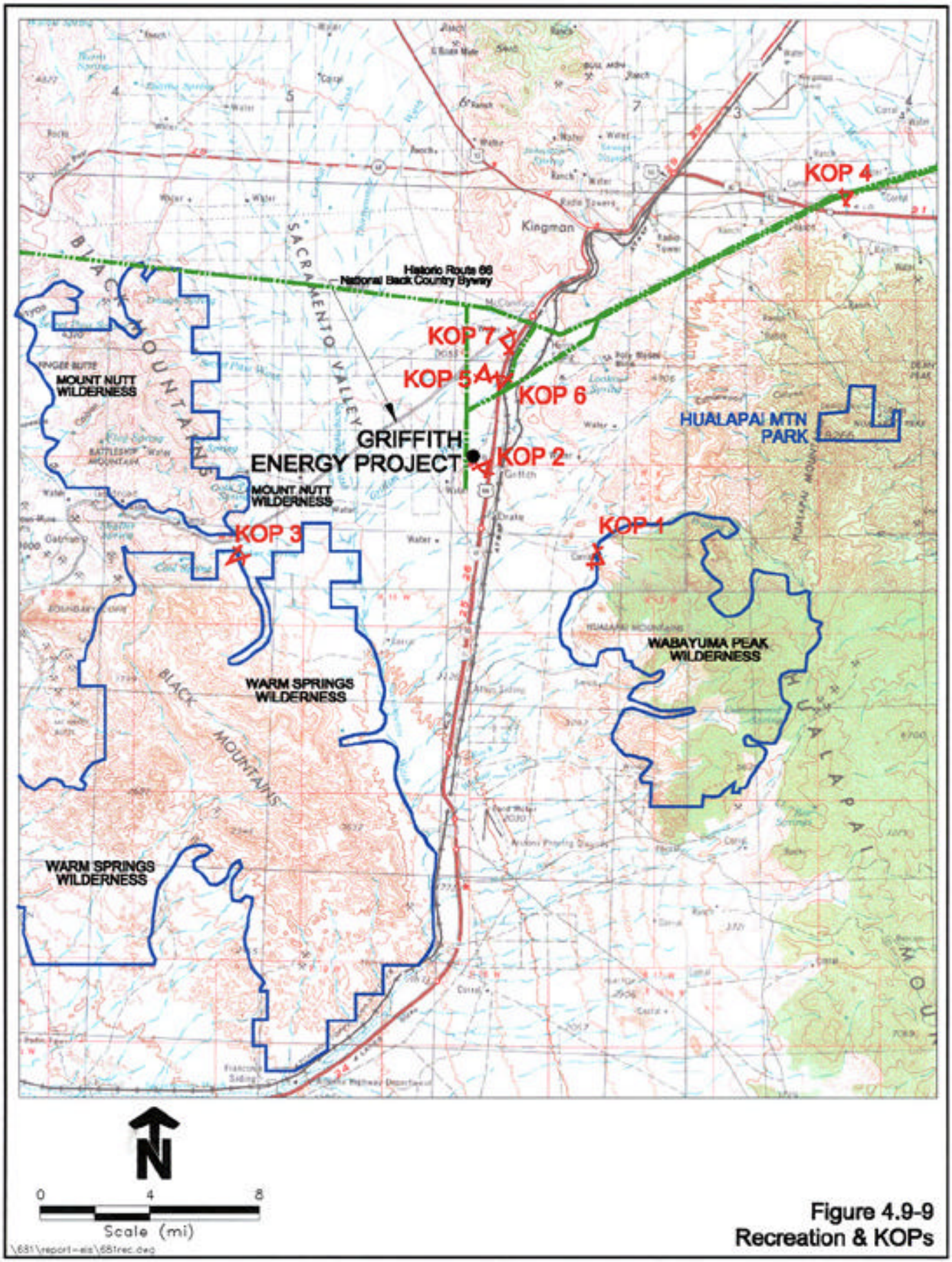

Figure 4.9-9
Recreation & KOPs