DOE/EA-1595

FINAL ENVIRONMENTAL ASSESSMENT

Davis-Mead 230-kV Transmission Line Reconductor Project, Mohave County, Arizona and Clark County, Nevada

Lead Agency
Western Area Power Administration

Cooperating Agency
National Park Service—Lake Mead National Recreation Area

November 2007

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Lead Agency
U.S. Department of Energy
Western Area Power Administration
615 South 43rd Avenue
Phoenix, Arizona 85009

Cooperating Agency
U.S. National Park Service
Lake Mead National Recreation Area
601 Nevada Way
Boulder City, Nevada 89005

November 2007

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LIST OF ACRONYMS AND ABBREVIATIONS

ADEQ	Arizona Department of Environmental Quality
AGFD	Arizona Game and Fish Department
amp	ampere
BA	Biological Assessment
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DOE	Department of Energy
DSW	Desert Southwest Region
EA	Environmental Assessment
EMF	Electric and magnetic fields
EPA	Environmental Protection Agency
ESA	Endangered Species Act
G	gauss
IF	Isolated Feature
IO	Isolated Occurrence
kV	kilovolt
LMNRA	Lake Mead National Recreational Area
m	meter
mG	milligauss
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
ROW	Right-of-way
SHPO	State Historic Preservation Office (or Officer)
TCP	Traditional Cultural Property
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
Western	Western Area Power Administration

1.0 INTRODUCTION

1.1 BACKGROUND

Western Area Power Administration (Western) is one of four power marketing administrations within the Department of Energy (DOE). Western's mission is to market and deliver reliable, cost-efficient hydroelectric power and related services. More than 17,000 miles of transmission line, 296 substations, and other electric power facilities in a geographic area encompassing 1.3 million squares miles are operated and maintained by Western. These facilities carry power from 57 power plants to a 15-state region within central and western United States. Consistent with its mission and strengthened by the Energy Policy Act of 2005, Western is to participate with others to identify and implement innovative methods of improving system efficiency, reliability, and cost effectiveness.

Western's Desert Southwest (DSW) Customer Service Region markets the Federal government's portion of power generated at dams along the lower Colorado River. DSW sells power in Arizona, southern California, and portions of the Southwest, to wholesale customers such as towns, rural electric cooperatives, public utility and irrigation districts, Federal, state, and military agencies, native American tribes, and U.S. Bureau of Reclamation customers. A major component of the electrical transmission system used for this purpose and a part of the electric transmission grid of the western United States is the Davis-Mead 230-kilovolt (kV) Transmission Line.

This Environmental Assessment (EA) presents an analysis of the environmental consequences of the Proposed Action and the No Action Alternative. This EA would be used to determine whether a "Finding of No Significant Impact" can be reached or whether an Environmental Impact Statement must be prepared.

This document complies with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Guidelines for Implementing NEPA (40 CFR Parts 1500-1508), the Department of Energy's (DOE) National Environmental Policy Act (NEPA) Implementing Procedures (10 CFR 1021), DOE Order 451.B, and other relevant Federal and State laws and regulations.

The proposed project is considered a maintenance activity; therefore, the reconductoring is expected to be accomplished pursuant to existing authorizations by land managing agencies including the National Park Service (NPS) and the Bureau of Land Management (BLM). The National Park Service-Lake Mead National Recreation Area (LMNRA) is a cooperator for the preparation of this EA. Western is the lead Federal agency.

1.2 PROJECT DESCRIPTION

The Proposed Action is the reconductor of the Davis-Mead 230-kV Transmission Line from Western's Davis Substation near Bullhead City, Mohave County, Arizona to its Mead Substation near Boulder City, Clark County, Nevada (Figure 1.1). The existing transmission line was built beginning in the late 1940s and completed in the early 1950s. The transmission line has a three-phase traditional conductor wire which transmits 230 kV of electricity. Lattice steel frame towers support the conductor wire and are spaced throughout the line at approximately 4-5 structures per mile. The transmission line and associated access roads occur on lands managed by the NPS, BLM, Western, and Boulder City (see Figure 1.1 for land management/ownership). Table 1.1 identifies the Public Land Survey location information of the project area.

1.3 PURPOSE AND NEED

The existing conductor capacity is below efficiency levels established as goals for transmission lines in planning efforts under the Energy Policy Act of 2005. In addition, excessive heat has taken its toll on the existing conductor over the years, causing sag (bowing) in the line as heat has expanded the existing conductor.

The purpose of the project is to increase the capacity of the transmission line. The 50+-year-old, less efficient conductor would be replaced with a more heat resistant conductor using the existing support structures (lattice steel structures). This new aluminum conductor steel

INSERT Figure 1.1. Map of Project Corridor.

supported conductor would provide improved thermal characteristics, which would allow Western to increase transmission capacity without increasing voltage. Additionally, the new conductor can be installed on existing structures, thus eliminating the need to acquire new right-of-way (ROW).

Table 1.1. Public Land Survey Project Area Summary

Township	Range	Sections
Arizona–Gila and Salt River Baseline and Meridian		
21 North	21 West	6, 7, 18
22 North	21 West	19, 30, 31
22 North	22 West	23, 24
Nevada–Mount Diablo Baseline and Meridian		
31 South	66 East	2, 3
30 South	66 East	6, 7, 8, 16, 17, 20, 21, 27, 34
30 South	65 East	1
29 South	65 East	5, 6, 8, 9, 15, 16, 22, 26, 27, 35, 36
28 South	64 East	5, 8, 9, 15, 16, 22, 23, 26, 35, 35
27 South	64 East	19, 30, 31, 32
27 South	63 East	1, 2, 12, 13, 24
26 South	63 East	3, 4, 9, 15, 16, 22, 26, 27, 34
25 South	63 East	1, 12, 13, 14, 23, 26, 27, 34
25 South	64 East	6
24 South	64 East	4, 8, 9, 17, 19, 20, 30, 31
23.5 South	64 East	33, 34
23 South	64 East	27, 28, 33

1.4 APPLICABLE LAWS AND REGULATIONS

In addition to NEPA, other key legislation enacted since the line was built that affects the existing line repairs and upgrades include the Clean Air Act, Clean Water Act, National Historic Preservation Act, and Clark County Comprehensive Planning ordinances. In 2001, the Clark County Multiple Species Habitat Conservation Plan was finalized, which guides conservation of species in Clark County, and the Lower Colorado River Multi-Species

Conservation Plan finalized in 2005 for protecting the Colorado River species. Table 1.2 outlines the major laws and regulations, agencies which have primary responsibility for implementation of the laws, and compliance regulations specific to the Proposed Action.

Table 1.2. Laws and Regulations Applicable to Proposed Action

Law/Regulation	Primary Agencies	Compliance Regulations
Endangered Species Act of 1973	U.S. Fish and Wildlife Service	Consultation required pertaining to effects on any threatened or endangered species.
National Historic Preservation Act of 1966, as amended	Nevada State Historic Preservation Office (SHPO)	Consultation on effects to cultural sites in Nevada.
	Arizona SHPO	Consultation on effects to cultural sites in Arizona.
American Indian Religious Freedom Act	Nevada and Arizona SHPOs	Consultation on effects to archaeological sites and tribal consultation.
Archaeological Resources Protection Act of 1979, as amended	Nevada and Arizona SHPOs	Consultation on effects to archaeological sites and tribal consultation.
Clean Water Act of 1977, as amended	Army Corps of Engineers	Section 404 nationwide permit
	Nevada Division of Environmental Protection and Arizona Department of Environmental Quality	Section 401 Water Quality Certification Section 402 National Pollutant Discharge Elimination System (NPDES) permit
Nevada Revised Statutes (NRS): Chapter 445B	Nevada Division of Environmental Protection	Temporary Working in Waterways Permit Nevada Pollutant Discharge Elimination System Stormwater permit for construction activities disturbing one or more acres of land. State Water Quality Certification
Clean Air Act of 1973	Environmental Protection Agency	National Ambient Air Quality Standards maintained by project
	Clark County Dept of Air Quality & Environmental Management	Clark County dust-control permit for construction activities disturbing more than one acre of land.
Federal Land Policy and Management Act of 1976	Bureau of Land Management	Decision that project is consistent with BLM–Las Vegas Resource Management Plan goals and objectives.
	National Park Service–LMNRA	Decision that project is consistent with NPS–LMNRA General Management Plan goals and objectives.
National Environmental Policy Act of 1969	Bureau of Land Management	Disclosure of effects and decision on significance of impacts from proposed project.
	National Park Service-LMNRA	Disclosure of effects and decision as Cooperating Agency on significance of impacts from proposed project.

	Western Area Power Administration	Disclosure of effects and decision as Lead Agency on significance of impacts from proposed project.
Migratory Bird Treaty Act	U.S. Fish and Wildlife Service	Ensure no adverse affects to migratory birds from project.
Occupational Safety and Health Act of 1970	All Federal agencies	Ensure project would meet Occupational Health and Safety Administration guidelines.
Executive Order 11593	All Federal agencies	Ensure protection and enhancement of cultural environment.
Executive Order 11988/11990	All Federal agencies	Ensure floodplains and wetlands are addressed.
Executive Order 12898	All Federal agencies	Ensure environmental justice is addressed.
Executive Order 13112	All Federal agencies	Prevention of spread of noxious weeds to extent practicable.
Executive Order 13175	All Federal agencies	Consultation and coordination with tribal governments.
Executive Order 13212	All Federal agencies	Ensure project is in compliance with energy policy.

1.5 SCOPING AND COORDINATION

The transmission line crosses Federal lands administered by the NPS and BLM as well as lands owned by Boulder City, Nevada, and Western. In addition to these agencies, the U.S. Fish and Wildlife Service (USFWS), Chemehuevi Tribe, Fort Mojave Tribe, Havasupai Tribe, Hualapai Tribe, Las Vegas Paiute Indian Tribe, Moapa Band of Paiute Tribe, and Pahrump Paiute Tribe were contacted requesting comments to the Proposed Action.

Western contacted the USFWS Field Offices in Las Vegas, Nevada, and Phoenix, Arizona, in the summer of 2005, regarding threatened and endangered species that may occur in the vicinity of the Proposed Action. At the same time, Western collected sensitive species information from the Arizona Game and Fish Department (AGFD), and the Nevada Department of Wildlife. In a letter dated September 26, 2005, Western invited the USFWS Las Vegas Field Office to become a cooperating agency in the EA process. They declined the invitation in a response letter dated October 13, 2005. Western requested to enter into formal consultation and submitted a draft Biological Assessment (BA) to the Las Vegas Field Office, November 2, 2006. USFWS Las Vegas replied, December 20, 2006, with a request for additional information in order to initiate formal consultation. Additional

contacts were made in November 2006 and January 2007 to discuss the possible effects of the Proposed Action on the California condor and endangered and threatened fish in the Colorado River. Western submitted a final BA to the USFWS and requested concurrence on its determinations (details provided in section 3.2.4.3).

On September 26, 2005, the NPS was invited to become a cooperating agency in the EA process. On October 4, 2005 they accepted the invitation. On April 25, 2007 they returned the following concerns:

- For invading non-native plants, require all vehicles to be pressure washed prior to entering the project area.
- Recommend the salvage and replacement of topsoil in disturbed areas rather than reseeding or implementing revegetation practices on the remaining ground surface.
- Require raptor-safe design features for new or retrofitted powerlines.
- Require an NPS on-site monitor.
- Prohibit new road construction.
- Prefer vegetation crushing over topsoil stripping at pull sites.
- May require the main access road be scarified at the completion of the project.
- Requested copies of the BA, cultural resources inventory report, other supporting documentation, and the current ROW agreement.

On September 26, 2005, the BLM and Boulder City, Nevada were invited to become a cooperating agency in the EA process. Although each has been a contributing party as an informational resource, both declined to be a cooperating agency.

The Hualapai Tribal Historic Preservation Office returned comment on February 14, 2007, with recommendations to monitor and avoid the three significant sites (AZ F:10:50[ASM], 26CK7452, and 12CK123) during construction activities and to establish an educational program concerning Hualapai cultural traditions and culturally sensitive areas for all construction-related personnel.

The proposed project normally would fall under a Categorical Exclusion according to Appendix B of CFR 1021 Subpart D (as referenced in the DOE's NEPA Policy Guidelines), whereby an action may be categorically excluded if, although sensitive resources are present on a site, the action would not adversely affect those resources. However, the proposed project does not meet the "Integral Element Clause" described above due to the following reasons. Project-related, environmentally sensitive resources include federally-listed threatened or endangered species or their habitat (including Critical Habitat), federally proposed or candidate species or their habitat, or State-listed endangered or threatened species or their habitat, and areas having a special designation such as Federally- and State-designated wilderness areas or national parks.

2.0 PROPOSED ACTION AND NO ACTION ALTERNATIVES

2.1 PROPOSED ACTION

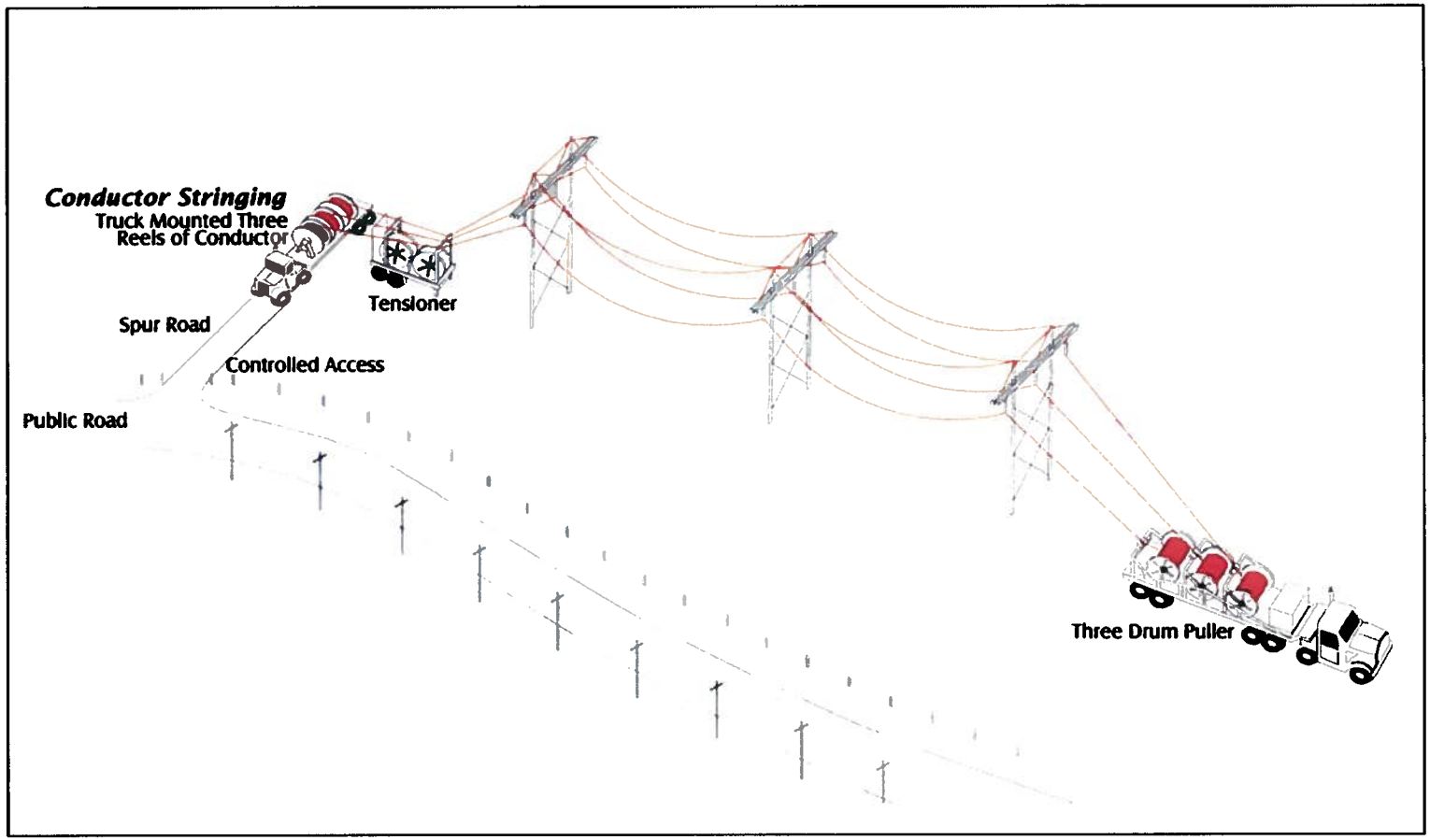
The Proposed Action is to reconductor approximately 61 miles of 230-kV transmission line from the Davis Substation at Davis Dam near Bullhead City, Arizona to the Mead Substation near Boulder City in southern Nevada. Western proposes to utilize their standard reconductoring process detailed in their Construction Standards (Standard 10–Transmission Line Electrical) (Western 2005a). Western also proposes to employ their Standard Mitigative Practices developed from their Annual Site Environmental Report and Construction Standards (Standard 13–Environmental Quality Protection) (Western 2005b). The following sections provide more detail on the specifics of the reconductor process, equipment required, and environmental protection measures proposed by Western.

2.1.1 Reconductor Process Overview

Reconductoring the 61-mile-long transmission line would involve replacement of the existing conductor and insulator assemblies. The steps involved in reconductoring are unclipping, pulling, splicing, tensioning, and clipping conductor. Conductor is the wire cable that is strung between the electric line structures (towers) through which the electric current flows. Table 2.1 lists the crew and equipment required to accomplish reconductoring. Insulators are the assemblies that suspend the conductor wire from each structure and are made of low electric conducting materials such as porcelain, glass, or polymer which inhibit the flow of electrical current from the conductor to the ground, or from one conductor to another. Existing lattice steel transmission line structures and overhead ground wire are proposed to be utilized and remain intact. The overhead ground wires which would remain are known as "shield wires" meant to protect the conductors from lightning strikes by transmitting the energy from the lightning through the wire and into the ground, limiting damage to the line.

Table 2.1. Equipment and Personnel Resources Needed for Proposed Action	
Number	**Equipment/Personnel**
1-2	Rubber-tired, 50-ton crane
2-3	1-ton line truck
2-3	¾-ton pickup truck
2-3	Bucket truck (manlifts)
3-4	Tractor trailer rig (tensioner, puller, and wire truck)
4-6	Line crewperson

At each structure, line crewmen would be hoisted up to the conductor using bucket trucks to unclip the existing conductor from the existing insulator assembly. A new insulator assembly with a traveler (pulley) would then be installed. An approximate 100-foot by 100-foot square area would be required at each structure for this process. The existing conductor would be attached and used to pull the line into place. Controlled tension is proposed to be maintained during this process, so a winch would be used at one end to pull the existing conductor, while the new conductor spool would be connected to a powered braking or tensioning system at the other end. This would allow for the line to maintain proper ground clearance so it does not create a safety hazard and prevent the tension from becoming so tight that it could pull off an insulator string. Approximately 25 pull sites are proposed for the line. Each one of these sites would have a temporary disturbance area of 100 feet wide by 300 feet long. Figure 2.1 illustrates this standard re-stringing process as described. As each spool of conductor is emptied, it is spliced to the beginning of the next spool of conductor at a splicing site, and the process described above would be repeated over subsequent stretches of the line. At each splicing site a crane and other equipment would be used. Approximately 23 of these splicing sites would be required for the entire 61 miles of the line. Each splicing site would require a temporary disturbance area of 100 feet by 100 feet.



Western AREA POWER ADMINISTRATION
United States Department of Energy
Western Area Power Administration
Upper Great Plains Region

Typical conductor stringing diagram

Figure 2.1

2.1.2 Access to Existing Line

Access to the transmission line would be by way of existing access roads, some of which may require improvement for use. Improvement activities could include blading and grading to remove ruts, easing of grades in and out of washes, and fill of washouts in order to allow passage of required vehicles and equipment. Access road disturbance is not expected to be more than 12 feet wide. All disturbances are expected to occur within existing transmission line and access road ROWs. No new easements are anticipated. Boat or helicopter would be used to access structures where access is impractical, primarily for structures located on steep slopes or bordering on Lake Mohave.

2.1.3 Right-of-Way, Staging Areas and Ground Disturbance

Western's existing ROW would be used for the Proposed Action; therefore, no new ROW would need to be obtained. The ROW is 200 feet in width throughout the line and 50 feet in width for all access roads. The BLM issued the original ROW lease for the line, even across what is now NPS-LMNRA.

Temporary ground disturbance within the ROW would occur at the tower pad sites, pulling/tensioning sites, splicing sites, and where the existing access roads and spur roads to the towers require maintenance (Table 2.2). Approximately 118.5 acres would be temporarily disturbed by the Proposed Action. Existing developed facilities like Mead Substation are slated for staging areas to store equipment and conductor reels. If during construction Western determines areas outside of the ROWs or on Western withdrawn lands are necessary, then the proper environmental review and land use permits would be completed prior to use.

Table 2.2. Temporary Ground Disturbance Calculations for Proposed Action				
Disturbance Type	**Quantity**	**Temporary Disturbance per Structure (acres)**	**Total Temporary Disturbance Area (acres)**	**Total Permanent Loss Area (acres)**
Pads	335	0.23	77.05	0.0
Pull Sites	25	0.69	17.25	0.0
Splice Sites	23	0.23	5.29	0.0
New Roads	0	0.0	0.0	0.0
Main Access Roads *(needing improvement)*	10 miles × 12 feet wide	NA	14.54	0.0
Spur Access Roads *(needing improvement)*	3 miles × 12 feet wide	NA	4.36	0.0
Total		NA	**118.49**	**0.0**

2.2 ENVIRONMENTAL PROTECTION MEASURES

The environmental protection and mitigation measures included in Western's 2005 Construction Standards: Standard 10-Transmission Line Electrical, 2005 Standard Mitigation Practices from the Annual Site Environmental Report and Construction Standards, Standard 13-Environmental Quality Protection, as well as agency recommendations, would be implemented during the construction activities associated with the Proposed Action; these measures are provided in Table 2.3.

2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, the existing transmission line would not be reconductored. Only essential maintenance activities would be performed. Structures and hardware would be maintained, repaired, and/or replaced as required during routine maintenance activities or in the event of emergency outages. Due to the age of the conductor however, sections of the line would require reconductoring to replace damaged and aging conductor. Emergency repair work has occurred infrequently (every 5 to 8 years).

Implementation of the No Action Alternative would preclude some of the anticipated effects of the Proposed Action; however, environmental effects would result from the increasingly frequent repairs and maintenance activities including reconductoring sections of the existing transmission line.

Table 2.3. Environmental Protection Measures for Proposed Action		
MITIGATION	**SOURCE**	**ACTION**
Soil Resources		
Access Road Rehabilitation	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13– Environmental Quality Protection	Location, alignment, and grade of construction access roads would be subject to Western's approval. When no longer required, access roads would be restored to their original condition. Surfaces of access roads would be scarified to facilitate natural revegetation, provide for proper drainage, and prevent erosion. If revegetation is required, then use regionally native plants.
Water Bars	Same as above	Water bars or small terraces would be constructed across ROW and all access roads on hillsides to prevent water erosion and to facilitate natural revegetation.
Erosion Control	Same as above	Erosion-control measures would be implemented on disturbed areas, including areas that must be used for maintenance operations (access ways and areas around structures).
Access Road Requirements	Same as above	The area would be used for access ways (12 feet wide).
Vegetation		
Landscape Preservation	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13– Environmental Quality Protection; NPS 25 April 2007 e-mail; BLM 20 August 2007 e-mail	The contractor would exercise care to preserve the natural landscape and would conduct its construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent works, approved construction roads, or excavation operations, all trees, native shrubbery, and vegetation would be preserved and would be protected from damage by the contractor's construction operations and equipment. Where such clearing occurs in the Lake Mead National Recreation Area, the contractor would consult with the NPS Representative.

Table 2.3. Environmental Protection Measures for Proposed Action		
MITIGATION	**SOURCE**	**ACTION**
Revegetation	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13–Environmental Quality Protection; NPS 25 April 2007 e-mail; BLM 20 August 2007 e-mail	On completion of the work, all work areas and access roads would be scarified or left in a condition which would facilitate natural revegetation, provide for proper drainage, and prevent erosion. All destruction, scarring, damage, or defacing of the landscape resulting from the contractor's operations would be repaired by the contractor. Construction staging areas would be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On abandonment, all storage and construction buildings, including concrete footings and slabs, and all construction materials and debris would be removed from the site. The area would be regraded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that would facilitate natural revegetation, provide for proper drainage, and prevent erosion. Topsoil would be removed, stockpiled, and respread at all heavily disturbed areas not needed for maintenance access. Where requested, a seed mixture would be approved by the land owner/manager. Vegetation crushing preferred over topsoil stripping at pull sites. All disturbed areas not needed for maintenance access would be scarified to facilitate natural revegetation, provide for proper drainage, and prevent erosion.
Resource Protection	Same as above	ROW would be located to avoid sensitive vegetation conditions including wetlands where practical, or if they are linear, to cross them at the least sensitive feasible point.
Visual Resources	Same as above	Removal of vegetation would be minimized to avoid creating a swath along the ROW.
Tree Clearing	Same as above	Clearing for the access roads would be limited to only those trees necessary to permit the passage of equipment.
Invasive Weeds	Western's Standard 13–Environmental Quality Protection; NPS 25 April 2007 e-mail; BLM 20 August 2007 e-mail	Requirement that all construction equipment and vehicles be pressure washed (especially the undercarriage) to remove foreign soil and debris that may introduce weeds into the project area.
Air Quality		
Dust Control	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13–Environmental Quality Protection	The contractor would utilize such practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants. Oil would not be used as a dust suppressant. Dust suppressants would be approved by Western prior to use.

Table 2.3. Environmental Protection Measures for Proposed Action		
MITIGATION	**SOURCE**	**ACTION**
Exhaust Emissions	Same as above	Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments or other inefficient operating conditions would not be operated until repairs or adjustments are made. Contractor and subcontractor machinery would have and use the air emissions control devices required by Federal, State or local regulation or ordinance.
Cultural Resources		
Avoid and monitor the three sites during construction: AZ F:10:50 (ASM), 26CK7452, 12CK123.	February 14, 2007 response letter (File: 2007-34NW)	Western to avoid these sites and provide an on-site monitor when construction activities are in proximity to these sites.
Cultural Education for Construction Crews	February 14, 2007 response letter (File: 2007-34NW)	Western to provide cultural education to all project personnel regarding Culturally Sensitive Areas prior to and during the construction phase.
Unanticipated Discovery	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13-Environmental Quality Protection	Should any cultural resources that were not discovered during the Class III Survey be encountered during construction, ground disturbance activities at that location would be suspended until the provisions of the National Historic Preservation Act and enabling legislation have been carried out. Contractor would be informed of the need to cease work in the location if cultural resources are discovered.
Site Avoidance Monitoring	Same as above	Construction activities would be monitored or sites flagged to prevent inadvertent destruction of any cultural resources for which the agreed mitigation was avoidance.
Site Vandalism	Same as above	Construction crews would be monitored to the extent possible to prevent vandalism or unauthorized removal or disturbance of cultural artifacts or materials from sites where the agreed mitigation was avoidance.
Water Resources		
Water Protection	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13– Environmental Quality Protection	Construction activities would be performed by methods that would prevent entrance, or accidental spillage, of solid matter contaminants, debris, any other objectionable pollutants and wastes into streams, flowing or dry watercourses, lakes, and underground water sources. Such pollutants and waste include but are not restricted to refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailing, mineral salts, and thermal pollution.

Table 2.3. Environmental Protection Measures for Proposed Action		
MITIGATION	**SOURCE**	**ACTION**
Stream Crossings	Western's Standard 13-Environmental Quality Protection	Crossing of any stream or other waterway would be done in compliance with Federal, State and local regulations. Crossing of some waterways may be prohibited by landowners, State or Federal agencies or require permits.
Stormwater Management	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13– Environmental Quality Protection	Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual watercourse itself. A National Pollutant Discharge Elimination System Permit for the Prevention of Stormwater Pollution from Construction Projects is obtained if required by State or Federal regulation.
Special Status Wildlife Species		
Litter Control	Western's Project Biological Assessment	All trash and food items generated by construction and maintenance activities would be promptly stored in raven and coyote-proof containers or removed daily from the project site.
Pre-construction Surveys	Western's Project Biological Assessment	Pre-construction surveys would be conducted for all listed, proposed, candidate or other sensitive species during the appropriate season within one year of construction. If any federally listed, proposed or candidate species are found, Western would re-initiate consultation with the USFWS.
Nesting Period	Western's Project Biological Assessment	To avoid the displacement of sensitive bird species no construction activity would occur in the Colorado River 100-year floodplain during the nesting period, March 1 through July 31.
Bird Collisions (e.g., raptors, condors, pelicans)	Western's Project Biological Assessment; December 20, 2006 response letter (File No. 1-5-07-F-441)	To reduce the risk of bird collisions with the transmission lines, Western would mark the overhead ground wires at the Colorado River crossing using the best currently available technology.
Colorado River Listed Fish Species and Critical Habitat	Western's Project Biological Assessment	To minimize loss of riparian habitat, the Colorado River would be spanned. Silt fences would be installed at the river crossing to prevent sediment from entering the Colorado River. No refueling of equipment or construction vehicles would be permitted within 500 feet of the riparian zone of the Colorado River or other permanent or semi-permanent water course.

Table 2.3. Environmental Protection Measures for Proposed Action		
MITIGATION	**SOURCE**	**ACTION**
Protection of Mojave Desert Tortoise	Western's Project Biological Assessment	Mitigation methods outlined in the "Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise" (USFWS 1992) would be followed as appropriate. These mitigation measures include the following: •A Biological Monitor, (a professional biologist that has training and experience with the desert tortoise) approved by Western and the Service would be present during activities in areas containing suitable habitat for the tortoise or any species of concern. •The Biological Monitor would obtain and maintain all necessary permits to conduct surveys and handle desert tortoises. The biological monitor must be familiar with the Desert Tortoise Council's "Guidelines for handling desert tortoises encountered on development projects" •Within desert tortoise habitat, disturbance related to site access, construction, and material storage would be limited to the minimum extent necessary for the project. Where grading is necessary, surface soils would be stored and replaced following construction. Existing roads or overland travel (no blading or grading) would be used whenever possible. •Trenches and unfilled auger holes would be covered at the end of activity each day to minimize the possibility of trapping tortoises or other wildlife. Western's Environmental Manager and the Service would be notified of any tortoise death or injury. Notification would include date, time, location (Global Positioning System if available), and circumstances of the death or injury.
Protection of California Condor: Monitoring	December 20, 2006 response letter (File No. 1-5-07-F-441)	Prior to the start of construction, contact personnel to monitor California condor locations and movements to determine the locations and status of condors in or near the action area.
Protection of California Condor: Monitoring	December 20, 2006 response letter (File No. 1-5-07-F-441)	If monitoring personnel indicate there is condor nesting activity within one mile of the project area, contact the USFWS for additional conservation measures and instruction.
Protection of California Condor: Litter Control	December 20, 2006 response letter (File No. 1-5-07-F-441)	To minimize the likelihood of condors visiting the project area, clean up the construction site at the end of each work day (e.g., trash removed, scrap materials picked up). Complete a daily inspection of the project area to ensure adequate clean-up measures are taken.
Protection of California Condor: Incidental Take Prevention	December 20, 2006 response letter (File No. 1-5-07-F-441)	If a condor moves into the project area or occurs at the construction site, cease all activities and construction until the condor leaves on its own volition. Contact the USFWS immediately.

Table 2.3. Environmental Protection Measures for Proposed Action		
MITIGATION	**SOURCE**	**ACTION**
Migratory Birds	Western's Project Biological Assessment	The Biological Monitor would be knowledgeable of the ecology of migratory birds and the laws and regulations protecting them. The Biological Monitor would inspect areas identified for ground clearing and leveling for active bird nests in the March to July prior to the start of project activities. During project activities, no actions would be taken that would result in adverse effects to migratory birds, their nests, or nest contents without a permit.
Training Program	Western's Project Biological Assessment	The Biological Monitor would develop a training program which would be attended by all personnel prior to entering the project area. This training program would include: •An overview of the project area, an explanation of the issues and concerns for project activities and sensitive environmental resources. •Identification of and procedures for dealing with sensitive biological resources including the protocol of entering and movement within the project area in relation to sensitive species. •A training sign-in sheet to record the name of every individual trained. Each trained individual would be given evidence indicating they have received this training and would keep that evidence with them at all times they are in the project area. This would allow anyone from Western or any resource management agency to assure they have attended training.
Protection of Sensitive Species	Western's Project Biological Assessment	The Biological Monitor would notify the construction manager to halt operations that may adversely affect a sensitive species.
Flag Work Area Boundaries	Western's Project Biological Assessment	The boundary of work areas would be clearly flagged to reduce the area of project related activities to the minimum extent practical. Workers would be advised of these boundaries to prevent unintentional additional disturbance outside of the designated areas.
Speed Limits	Western's Project Biological Assessment	The speed limit for all vehicles on non-public access roads would not exceed 15 miles per hour.
Pets	Western's Project Biological Assessment	No pets would be permitted on the project.
Hazardous Materials and Solid Waste		
Disposal of Waste Material	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13– Environmental Quality Protection	Manage, dispose or recycle waste material in accordance with applicable Federal, State and local regulations and ordinances. In addition to the requirements of the Contract Clause "Cleaning Up", remove all waste material from the construction site. No waste shall be left on Western property, ROW, or easement. Burning or burying of waste material is not permitted.

Table 2.3. Environmental Protection Measures for Proposed Action		
MITIGATION	**SOURCE**	**ACTION**
Recyclable Material	2005 Annual Site Environmental Report Standard Mitigative Practices	Reduce wastes, including excess Western material, by recycling, reusing or reprocessing.
Pollutant Spill Prevention, Notification and Cleanup	2005 Annual Site Environmental Report Standard Mitigative Practices; Western's Standard 13– Environmental Quality Protection	Provide measures to prevent spills of pollutants and respond appropriately if a spill occurs. A pollutant includes any hazardous or non-hazardous substance that when spilled, will contaminate soil, surface water, or ground water. This includes any solvent, fuel, oil, paint, pesticide, engine coolants, and similar substances. Provide Western with a Spill Prevention Notification and Cleanup Plan (Plan) for approval 14 days prior to start of work. Approval of the Plan is for the purpose of determining compliance with the specifications only and would not relieve the Contractor of the responsibility of compliance with Federal, State and local regulations. The Plan will include spill prevention measures, notification, employee awareness training, commitment of manpower, and, if applicable, address all requirements of 40CFR112 pertaining to Spill Prevention, Control and Countermeasures Plans.
Noise		
Construction Noise	2005 Annual Site Environmental Report Standard Mitigative Practices	To prevent nuisance conditions due to construction noise, all internal combustion engines used in connection with construction activity shall be fitted with an approved muffler and spark arrester.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter provides a description of the affected environment within the project area and provides an assessment of the potential direct and indirect environmental consequences associated with the Proposed Action and No Action Alternative. Cumulative impacts analysis is presented in Section 3.3 and discusses other known projects around the project area and the cumulative effect to the environment from the Proposed Action.

3.1 Resources Considered But Not Further Evaluated

Resources considered but not further evaluated were based on internal and external scoping discussed in Chapter 2. The following resource areas were determined not to contain any potential effects from the Proposed Action or No Action Alternative and therefore are only briefly discussed in this EA. Each has been determined not to have any indirect, direct, or cumulative effects from the Proposed Action or No Action Alternative.

- Geology
- Land Use
- Groundwater
- Socioeconomics
- Hazardous Materials and Solid Waste

3.1.1 Geology

The project area is typical of the Great Basin physiographic province and varies from north/south-oriented mountain ranges that have eroded laterally to long narrow desert valleys. Volcanic and granitic rocks outcrop in the mountains. Alluvial fans extend from the base of the mountains and level out to basin lowlands. The alluvial deposits in the valley floor areas include interbedded sequences of gravel, sand, silt, and clay. The deposits are generally unconsolidated, but may be cemented in the vicinity of fault zones or where mineralized water is present (USGS 2006). Neither the Proposed Action nor the No Action Alternative would require drilling or anything more than surface disturbance.

Implementation of the Proposed Action or the No Action Alternative would not change the geology of the area.

3.1.2 Land Use

The existing transmission line ROW is located on public lands managed by the BLM and NPS and lands owned by Boulder City, Nevada and Western. Approximately 25 miles cross BLM-managed lands where recreation and mining are the primary land uses. The LMNRA constitutes the NPS-managed lands and the existing line crosses approximately 23 miles of the LMNRA. Therefore, considerable recreational activities take place in and around the transmission line ROW. These activities include but are not limited to water sports, hiking, wildlife photography, and roadside sightseeing. The transmission line traverses approximate 11 miles of the Boulder City-Eldorado Valley Preserve, which is a multi-species conservation easement south of Boulder City.

No new ROW or supporting structures are required for reconductoring the line, and access would be via existing roads. The construction crews operating in the various land jurisdictions and minor generation of dust and noise would represent intrusions with regard to existing land uses. Where the transmission line crosses over the Colorado River, water sports enthusiasts would experience short-term intrusion during replacement of the line across Lake Mohave. However, these intrusions would be short-term and localized. The transmission line has been a part of the landscape for over 50 years. The line does not impact any recreational destinations or access to those destinations. Recreational activities are dispersed throughout a large region in which the transmission line is located.

Maintenance activities over the life of both the Proposed Action and No Action Alternative would continue to require crews and equipment to periodically enter the area using existing ROWs and public roads for access. Implementation of the Proposed Action would likely result in a reduction of maintenance activities in the foreseeable future when compared to the No Action Alternative. This is due to the age of the existing transmission line, which would require increasing maintenance as the line continues to age. Implementation of the Proposed

Action or the No Action Alternative would not result in changes to the existing landowners or land uses.

3.1.3 Groundwater

Regionally, the project area is located in the Colorado Flow System (Bohannon 2002). Groundwater that originates as precipitation over areas of higher elevation generally flows toward the axis of the valleys (Eldorado, Paiute, and Cottonwood), which form subsystems of the Colorado Flow System. Flow beneath the basins is either north into Las Vegas Valley or eastward into the Colorado River Valley (DOE 1996). Groundwater depth below valley floors is approximately 300 feet.

There are no identified wells within the existing transmission line ROW. Small quantities of water would be drawn from commercial sources or by permit from land managers for use in construction. The quantity of water used during reconductoring under the Proposed Action would not be sufficient to affect water quantity. Under the Proposed Action and the No Action Alternative, maintenance activities would not generally require water. Implementation of the Proposed Action or the No Action Alternative would not result in changes to the groundwater in the area.

3.1.4 Socioeconomics

The small work force required for the Proposed Action (see Table 2.1) would not result in a large influx of workers to any of the cities or towns located in the vicinity of the project area. Given the small work force, the short-construction period and the nearness and size of Las Vegas, Henderson, Boulder City, Laughlin, and Bullhead City, there would be sufficient temporary housing available for non-local workers. The Proposed Action would not have an adverse effect on regional infrastructure, including schools, fire and police protection, and local transportation. If the contractor selected for the Proposed Action uses non-local workers, a short-term benefit to the local economy might occur due to the increased presence of workers from outside locations. Operation and maintenance of the Proposed Action would be the same as the existing Davis-Mead Transmission Line. For the Proposed Action and the

No Action Alternative, maintenance activities would be routinely conducted by Western. Implementation of the Proposed Action or the No Action Alternative would not result in changes to the socioeconomics of the area.

3.1.5 Hazardous Materials and Solid Waste

Western would require that crews handle hazardous materials and solid wastes in accordance with Federal, state, and local laws. All such materials generated from the Proposed Action would be properly disposed of, including recycling the existing conductor. The contractor would be required to comply with the environmental protection measures identified in Table 2.3 which include development of a pollutant spill prevention, notification, and cleanup plan. The plan would identify any hazardous materials that would be used, precautions to prevent spills, and employee awareness training. Operation and maintenance of the Proposed Action would be the same as the existing Davis-Mead Transmission Line. Any hazardous materials or solid waste used or generated by maintenance activities under the No Action Alternative would be properly disposed of in accordance with Western's Standard Mitigative Practices. No measurable effect from hazardous materials and solid waste is expected with implementation of the Proposed Action or the No Action Alternative.

3.2 Resources Evaluated in Detail

The following resources were analyzed in detail for direct and indirect effects:

- Soils
- Surface Water Resources
- Air Resources
- Biological Resources
- Cultural Resources
- Visual Resources
- Noise
- Safety and Health
- Environmental Justice

The analysis of each resource area describes the affected environment (*Affected Environment*) and identifies the environmental impacts to that environment (*Environmental Consequences*). The Environmental Consequences includes Western's significance criteria which provide the basis for evaluating impacts.

Several different types of impacts may be associated with any construction project. Short-term impacts are associated with the construction phase and would not last over one or two years after construction is completed. Long-term impacts would extend over the life of the project and beyond. Direct impacts result from the construction, operation, and maintenance of the line and occur at the same time and place. Indirect impacts are caused by the action and occur later or are farther removed in distance.

3.2.1 Soils

Affected Environment

Soils in the valleys are moderately deep, medium-textured saline and alkaline in lowland areas; shallow, gravelly coarse-textured over the alluvial fans; and discontinuous, rocky, gravelly, and coarse-textured near and within the mountainous areas (Hendricks 1985). Soils in the project area range from playas and low depressional areas to shoulders of alluvial fan remnants with slopes of 4 to 15 percent to summits of fan remnants with up to 30 percent slope.

Environmental Consequences

A significant impact to soils would occur if the compaction or mixing of soil results in long-term loss of productivity or substantially alters current use or revegetative growth.

Proposed Action

Construction activities associated with the Proposed Action would result in short-term soil compaction and disturbance. Activities that would impact soils include blading and grading to remove ruts, easing of grades in and out of washes, and fill of washouts in order to allow passage of construction equipment and vehicles. The soil disturbance may result in short-

term erosion in localized areas, primarily where construction equipment requires a level working area or where access road improvements are needed to allow safe passage of equipment and vehicles. Since the construction activities would take place within the existing transmission line ROW and access would be by existing roads, soils impacted by construction activities have been previously disturbed during installation and maintenance of the existing transmission line.

With the implementation of the environmental protection measures identified in Table 2.3, the Proposed Action would not result in a long-term loss of productivity or substantially alter current use or revegetative growth.

No Action Alternative

The No Action Alternative would result in impact to soils associated with continued maintenance and repair of the existing transmission line. The impacts include some localized soil disturbance and compaction. Repairs would be required with increasing frequency as the transmission line continues to age. To avoid or minimize soil impacts, Western's Standard Mitigative Practices would be implemented during maintenance activities. The No Action Alternative would not result in a long-term loss of productivity or substantially alter current use or revegetative growth.

3.2.2 Surface Water Resources

Affected Environment

Surface water resources in the project area include numerous ephemeral washes and Lake Mohave. Surface water runoff is infrequent and occurs as ephemeral flow in typically dry washes, primarily in response to summer thunderstorms and transiting winter storms. Surface water flow is from the base of the north-south mountain ridges through gently sloping alluvium towards valley bottoms. Flash-flooding may occur in response to intense thunderstorms. Ponding of surface water may occur in isolated areas and is short-lived.

Lake Mohave was created by construction of Davis Dam across the Colorado River. Approximately 1,000 feet of the existing transmission line crosses Lake Mohave immediately north of Davis Dam in Arizona. Approximately 7 miles north of the dam, the transmission line spans approximately 3,500 feet of the lake, crossing from Arizona to Nevada. For 1.5 miles north of this crossing, the transmission line parallels the western edge of the lake, occasionally crossing water surface where the water has backed up into canyons which drain to Lake Mohave.

There are no known springs within the project corridor. The closest springs occur in the Newberry Mountains which lie west of the southernmost 15 miles of the project area.

The existing transmission line crosses the 100-year floodplain of the Colorado River. Within Nevada, the line also crosses the 100-year floodplains for Nellie Wash, Empire Wash, White Rock Wash, and five unnamed ephemeral washes. The 100-year floodplains of Katherine Wash and two unnamed ephemeral washes are crossed by the line in Arizona.

Water quality throughout the region is generally a sodium-bicarbonate type with high concentrations of total dissolved solids and medium to high salinity. Data are generally lacking for metals and other trace constituents (DOE 1996).

Wetlands and ephemeral washes that meet specific criteria fall under the jurisdiction of the United States Army Corps of Engineers (USACE). The USACE regulates the placement of dredge or fill material into jurisdictional waters of the U.S. under Section 404 of the Clean Water Act (CWA). Waters of the U.S. include streams, ponds, lakes, ephemeral washes, and wetlands. The existing line spans ephemeral washes within the ROW.

Lake Mohave is classified as a lacustrine limnetic wetland because it is (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30 percent areal coverage; and (3) total area exceeds 20 acres (8 hectares) with an unconsolidated bottom (cobble, gravel, sand,

mud, or organic) (USFWS 2006). Lake Mohave is the only wetland within the project area. It is also a navigable water of the U.S. regulated by the USACE under Section 10 of the Rivers and Harbors Act and Section 404 of the CWA.

The CWA Section 404 process also requires a Section 401 water quality certification for jurisdictional waters of the U.S. The Nevada Division of Environmental Protection (NDEP) and the Arizona Department of Environmental Quality (ADEQ) are the regulatory agencies responsible for this certification and compliance with Section 401.

The CWA Section 402 prohibits discharge of pollutants into jurisdictional waters of the U. S. from any point source unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. NDEP and ADEQ have regulatory responsibility for compliance with Section 402.

Environmental Consequences

A significant impact on surface water would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

- Modification of a floodplain that would impede or redirect flood flows that would result in property damage on- or off-site.
- Contamination of surface water from erosion or storm water runoff that would result in a violation of Federal and/or state water quality standards.
- Surface water quality degradation which causes a long-term loss of human use or use by aquatic wildlife and plants.
- Alteration of the existing drainage pattern of the site or area that would result in off-site erosion or siltation, resulting in adverse effects to adjacent properties.
- Surface water impacts that would violate Section 404 of the Clean Water Act or other applicable surface water regulations, including state-established standards for designated uses.

Proposed Action

The reconductored transmission line would span water resource areas that include floodplains, ephemeral washes, and Lake Mohave. Structure 6/3 is located within the Colorado River 100-year floodplain. It is on a spit of land that extends into the lake about 7 miles north of Davis Dam. In high water periods this spit of land becomes an island. Reconductoring activities at this structure would not place new materials in the floodplain and therefore, would not affect the Colorado River floodplain. Access road improvements are proposed for unnamed ephemeral washes within two 100-year floodplains in Nevada. Grading the washes would place approximately 0.6 cubic yards of native material within the 100-year floodplain south of structure 56-2 and approximately 1.6 cubic yards of native material within the floodplain north of structure 15-2. No fill materials would be placed within the 100-year floodplains in Arizona. The minimal quantities of native materials placed within the two floodplains in Nevada would not impede or redirect flood flows.

The existing conductor would be used to pull the new wire across the Lake Mohave water surface, especially in areas of large open water. Structures nearest Lake Mohave would be accessed by boat or helicopter where road access is impractical. Conductor replacement would not result in the placement of fill materials in Lake Mohave. Replacing the conductor across Lake Mohave is considered maintenance by the USACE; a Rivers and Harbor Act Section 10 permit would not be required provided the existing clearance is maintained.

Surface water quality impacts would be minor and localized to those washes where access road improvements would be required to allow safe passage of the construction equipment. The washes would be bladed to provide for smoother crossings. One wash may require installation of a 12-inch culvert. Washes would not be used for equipment setup or pulling sites unless no other reasonably flat areas are available near a structure. Sedimentation due to disturbance of soils in a wash or erosion of soils from disturbed adjacent upland areas may occur. Contaminants could be introduced from runoff of accidental spills such as fuels used for construction equipment.

Improvements to existing access roads would result in the placement of fill material in 47 of the ephemeral washes for a total permanent impact of 0.2 acres. Western determined these 47 washes are waters of the U.S. and has consulted with the USACE regarding the appropriate Section 404 permit required for the Proposed Action. The USACE determined that a non-notifying nationwide permit (NWP) 14 is appropriate provided all conditions of the permit are met and no impact is greater than 0.1 acre. Western has also consulted with NDEP and ADEQ regarding their respective 401 water quality certification requirements for the Proposed Action. Section 401 certification for the NWP 14 is conditionally certified by the ADEQ. Western applied for Section 401 certification from the NDEP. Conditions of the permits and certifications would be implemented by Western and its contractor.

The Proposed Action would result in one or more acres of ground disturbance. In compliance with Section 402 of the CWA, Western's contractor would be required to obtain a NPDES Permit from ADEQ and NDEP.

The Colorado River floodplain, Lake Mohave, and the ephemeral washes would remain essentially unchanged relative to existing conditions. The Proposed Action would not modify a floodplain or alter existing drainage patterns. With implementation of the environmental protection measures identified in Table 2.3, the Proposed Action would not violate Federal and/or state water quality standards. There would not be a long-term loss of human use or use by aquatic wildlife and plants. Western and its contractor would implement the terms, conditions and any other requirements of the permits and certifications to comply with Sections 401, 402 and 404 of the CWA.

No Action Alternative

The No Action Alternative would require maintenance and repair activities with increasing frequency as the existing transmission line continues to age. Access road improvements would be required across some washes. Impacts to washes from these improvements would be spread out over time, as maintenance occurred. The maintenance activities may cause minor, localized, and short-term adverse effects to water quality from runoff of soils and

sedimentation of waters. Western's Standard Mitigative Practices would be implemented during maintenance activities. All appropriate permits and certifications would be obtained to ensure compliance with Sections 401, 402, and 404 of the CWA, where required. The No Action Alternative would not modify a floodplain, alter existing drainage patterns, or violate Federal and/or state water quality standards or Sections 401, 402 and 404 of the CWA.

3.2.3 Air Resources

Affected Environment

The Proposed Action is in an attainment area with respect to National Ambient Air Quality Standards (EPA 2007). The Environmental Protection Agency (EPA) has determined that the greater Las Vegas area is in serious non-attainment for particulate matter. The closest Class I Prevention of Significant Deterioration area is the Grand Canyon National Park, approximately 50 miles east of the project area. The project area is principally undeveloped with few emission sources in the area. Typical sources of air contaminants are fugitive dust, off-road and on-road vehicles, railroads, aircraft, mining and milling operations, and power generation plants.

Environmental Consequences

A significant impact on air quality would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

- Predicted concentrations of Criteria Air Pollutants would exceed state and/or Federal ambient air quality standards.
- Predicted air pollutant emissions that would result in a change in visibility that would exceed Class I standards established by the Prevention of Significant Deterioration regulations.

Proposed Action

Construction activities associated with the Proposed Action would result in localized fugitive dust and vehicular emissions during the construction phase. Due to the downwind location of the Proposed Action, the project activities would not contribute pollutants to Las Vegas.

Low levels of fugitive dust may permeate the Class I airshed of the Grand Canyon National Park for a short-term period, but would not likely result in non-attainment and would subside following construction activities.

Western's contractor would obtain a dust control permit from Clark County for construction activities in Nevada. Although no dust control permit is required for the portion of the Proposed Action in Arizona, the contractor would be required to comply with the Arizona Administrative Code Title 18, R18-2-604 through 607 to prevent excessive amounts of airborne particulate matter. These actions in concert with the implementation of the environmental protection measures identified in Table 2.3, the Proposed Action would not exceed state and/or Federal ambient air quality standards or Class I standards for Prevention of Significant Deterioration or change the visibility of the Grand Canyon National Park airshed.

No Action Alternative

The No Action Alternative would result in minor fugitive dust and vehicular emissions associated with maintenance and repairs of the existing transmission line. The impacts are infrequent, localized, and associated with minor soil disturbance and the operation of construction equipment. Repairs would be required with increasing frequency as the transmission line continues to age. With implementation of Western's Standard Mitigative Practices, the No Action Alternative would not exceed state and/or Federal ambient air quality standards or Class I standards for Prevention of Significant Deterioration.

3.2.4 Biological Resources

Project-related impacts to vegetation, wetlands, and wildlife (including endangered, threatened, proposed, or candidate species), and mitigation of impacts to biological resources are discussed in the following sections.

3.2.4.1 Vegetation

Affected Environment

The transmission line is located in the Mohavian Biogeographic Province in the Mohave desertscrub biome (Brown 1994). The dominate shrub species are creosotebush (*Larrea tridentata*), bursage (*Ambrosia* spp.), saltbush (*Atriplex* spp.), and blackbrush (*Coleogyne ramosissima*). Cacti include various cholla (*Opuntia* spp.). Joshua tree (*Yucca brevifolia*) and Mohave yucca (*Yucca schidigera*) are also present. The herbaceous understory is dominated by low annual grasses and forbs which includes big galleta (*Hilaria rigida*), goldenhead (*Acamptopappus shockleyi*), alkali weed (*Nitrophila occidentalis*), bush buckwheat (*Eriogonum fasciculatum*), and seep weed (*Suaeda* sp.) (Brown 1994). Vegetative ground cover is sparse, ranging from 1 to 5 percent, with canopy cover ranging from 5 to 18 percent.

The desert riparian community is found along washes where vegetation can be fairly dense. Common species include bladder sage (*Salazaria mexicana*), cheesebush (*Hymenoclea salsola*), and rabbitbrush (*Chrysothamnus nauseosus*). Tree species include desert willow (*Chilopsis linearis*) and catclaw acacia (*Acacia greggii*).

Environmental Consequences

A significant impact on vegetation would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

- Loss of rare plants, native plant communities and other sensitive features identified by a state or Federal resource agency.
- Loss to any population of plants that would result in a species being listed or proposed for listing as threatened or endangered.
- Introduce or increase the spread of noxious weeds.

Proposed Action

The Proposed Action would result in short-term impact to vegetation resulting from compaction or crushing and vegetation stripping due to access road and pad repair or

upgrades, when required. To the extent possible, construction activities would avoid desert riparian areas. The environmental protection measures identified in Table 2.3 would be implemented to minimize impacts to vegetation. The Proposed Action would not result in the loss of rare plants, native plant communities or other sensitive resources. Vegetation impacts would not result in a species being listed or proposed for listing as threatened or endangered. Construction equipment and vehicles would be pressure washed to prevent the introduction or increase the spread of noxious weeds.

No Action Alternative

The No Action Alternative would affect vegetation that has regrown within the ROW and on access roads associated with maintenance activities. The impacts consist of compaction or crushing and would not result in significant plant loss to the biological community. Western would implement its Standard Mitigative Practices when maintenance activities are required. The No Action Alternative would not result in the loss of rare plants, native plant communities or other sensitive resources. Vegetation impacts would not result in a species being listed or proposed for listing as threatened or endangered. A component of Western's equipment maintenance is high-pressure washing construction equipment on a regular basis, to prevent the introduction and spread of noxious weeds. The No Action Alternative would not introduce or increase the spread of noxious weeds.

3.2.4.2 Wildlife

Affected Environment

Consistent with the sparse vegetation of the desert environment, large mammals are few in number. Desert bighorn sheep (*Ovis canadensis nelsoni*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*) can be found at the desert's edge. Feral burros (*Equus asinus*) may be found occasionally in or near the project corridor. Smaller, less wide-ranging mammals, principally rodents, occur in the project area. Examples include, Merriam's kangaroo rat (*Dipodomys merriami*), desert woodrat (*Neotoma lepida*), southern grasshopper mouse (*Onychomys torridus*), long-tailed pocket mouse

(*Perognathus formosus*), little pocket mouse (*P. longimembris*), canyon mouse (*Peromyscus crinitus*), and cactus mouse (*P. eremicus*) (Brown 1994).

The principal non-raptor avian species in the project area is the curve-billed thrasher (*Toxostoma curvirostra*) and Leconte's thrasher (*T. lecontei*). Various raptors also frequent the project corridor.

Reptiles are relatively abundant in and near the project area. Various snakes and lizards as well as the banded gecko (*Coleonyx variegates*) and banded Gila monster (*Heloderma suspectum cinctum*) may be found (Brown 1994).

A number of fish species occupy the waters between Lake Mead and Davis Dam. Examples include the threadfin shad (*Dorosoma petenense*), flannelmouth sucker (*Catostomus latipinnis*), black bullhead (*Ameiurus melas*), channel catfish (*Ictalurus punctatus*), striped bass (*Morone saxatilis*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), smallmouth bass (*Micropterus dolomieui lacepede*), and largemouth bass (*Micropterus salmoides*) (University of Texas 2004).

Environmental Consequences

A significant impact on wildlife would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

- Loss of individuals of a population of wildlife that would result in the species being listed or proposed for listing as threatened or endangered.
- Violation of any statutes and regulations pertaining to wildlife.
- Interfere substantially with the movement of any native, resident or migratory wildlife species for more than two reproductive seasons.
- Substantial local loss of wildlife habitat (as compared to total available resources within the area) or habitat productivity.
- Reduce the range of occurrence of any wildlife species.

Proposed Action

Effects of the Proposed Action are similar to those associated with maintenance and repair under the No Action Alternative. Wildlife species in and near the ROW may be displaced temporarily during project-related construction activities. Vehicle use of the ROW would increase only during the construction activities related to the Proposed Action. Stream siltation would not be an effect during project activities if the mitigation practices discussed regarding soils, water, and wetland resources are implemented. Wildlife habitats would not be altered, lost, or fragmented except in localized areas. The reconductored line would meet or exceed the design recommendations to minimize electrocutions of large birds and would likely be more visible than the existing line (APLIC 2006). Noise from construction activities associated with the Proposed Action may temporarily displace wildlife from the immediate area of the ROW.

The environmental protection measures identified in Table 2.3 would be implemented to minimize impacts to wildlife. The Proposed Action would not result in the species being listed or proposed for listing as threatened or endangered or violate any statutes and regulations pertaining to wildlife. Because the existing line has been in place for more than 50 years and given the short-term, localized construction activities, the Proposed Action would not interfere substantially with the movement of any native, resident or migratory wildlife species for more than two reproductive seasons. Vegetation removal, where required, would not result in a substantial local loss of wildlife habitat or habitat productivity. The Proposed Action would not reduce the range of occurrence of any wildlife species.

No Action Alternative

Maintenance and repair activities associated with the No Action Alternative have short-term, localized effects on wildlife in the immediate vicinity of the existing ROW. Such effects include habitat alteration for small mammals, direct impacts to small mammals and reptiles, and increased noise. The No Action Alternative would not affect avian species to any greater extent than currently exists. Repairs would be required with increasing frequency as the transmission line increases in age.

Effects to wildlife under the No Action Alternative would be minimal. Western would implement its Standard Mitigative Practices when maintenance activities are required. Vegetation removal from the No Action Alternative would be localized and occur over time as maintenance and repair activities are required. The No Action Alternative would not result in the species being listed or proposed for listing as threatened or endangered or violate any statutes and regulations pertaining to wildlife. Maintenance and repair of the existing line would not interfere substantially with the movement of any native, resident or migratory wildlife species for more than two reproductive seasons. There would not be a substantial local loss of wildlife habitat or habitat productivity. The No Action Alternative would not reduce the range of occurrence of any wildlife species.

3.2.4.3 Endangered, Threatened, Proposed, Candidate and Sensitive Species

Affected Environment

Western consulted with the USFWS Field Offices in Las Vegas, Nevada and Phoenix, and Flagstaff, Arizona, the Nevada Department of Wildlife, and the AGFD. Approximately 57 miles of the transmission line is located in Critical Habitat for the Mojave desert tortoise. Extensive fieldwork has already occurred in identifying the natural resources of the project area as documented in the Clark County Desert Conservation Plan (Clark County 1995). In addition, Western field biologists visited the existing line route on several occasions in 2005 and once more in 2007 to determine if ecological conditions had changed significantly since the 1995 Desert Conservation Plan was issued. As a result of consultation efforts, a total of 11 species were analyzed in preparing the Biological Assessment for this project (Western 2007). Species evaluated, Federal status, habitat descriptions, and Western's effects determinations are presented in Table 3.1.

Environmental Consequences

A significant impact on endangered or threatened species or their critical habitats would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

Table 3.1. Special Status Species Addressed in the Biological Assessment			
COMMON NAME	**STATUS***	**GENERAL HABITAT**	**DETERMINATION**
Bonytail chub *Gila elegans*	E	Mid-channel currents in calm reaches of the lower Colorado River	May affect, not likely to adversely affect
Humpback chub *Gila cypha*	E	The humpback chub is not known to occur in the project area	No effect
Razorback sucker *Xyrauchen texanus*	E	Lower Colorado River between Hoover Dam and Davis Dam	May affect, not likely to adversely affect
Colorado pikeminnow *Ptychochoelius lucius*	E	Upper Colorado River	No effect
California brown pelican *Pelecanus occidentalis californicus*	E	Gulf of California and the Colorado River delta	May affect, not likely to adversely affect
California condor *Gymnogyps californianus*	E	Experimental/nonessential population about 150 miles northeast of project area	May affect, not likely to adversely affect
Southwestern willow flycatcher *Empidonax traillii extimus*	E	Riparian communities with dense stands of willow and/or tamarisk, preferably over water	May affect, not likely to adversely affect
Yuma clapper rail *Rallus longirostris yumanensis*	E	Freshwater marshes with stable water levels supporting cattails and bulrushes	No effect
Yellow-billed cuckoo *Coccyzus americana*	C	Large riparian areas with good canopy cover and surface water	May affect, not likely to adversely affect
Desert tortoise (Mojave population) *Gopherus agassizii*	T	Creosotebush-dominated scrub with herbaceous understory	May adversely affect the species
Relict leopard frog *Rana onca*	C	The relict leopard frog is known to occur in geothermal springs and perennial wetlands.	No effect
*E=Endangered; T=Threatened; and C=Candidate.			

Source: Western 2007

- Jeopardizing the continued existence of a federally-listed species.
- Loss of individuals of a population of species that would result in lowering a species status (e.g., from threatened to endangered).
- Adversely modifying Critical Habitat to the degree it would no longer support the species for which it was designated.

Proposed Action

Western's determination of may affect but not likely to adversely affect the bonytail chub or the razorback sucker is based on discountable or insignificant effects due to not altering the lake levels and not increasing sedimentation in Lake Mohave. The may affect but not likely to adversely affect determination for the California condor, southwestern willow flycatcher, the California brown pelican, or the yellow-billed cuckoo is based on discountable or insignificant effects due to the lack of habitat and usage of the project area, and/or the use of line marking devices at river crossings and other areas where the line intersects areas of concentrated movements of birds to and from feeding and loafing habitat. The Proposed Action would not modify designated Critical Habitat for the bonytail chub, the razorback sucker or the southwestern willow flycatcher.

Western determined that the Proposed Action may adversely affect the Mojave desert tortoise and may modify but not adversely modify designated Critical Habitat for the tortoise. Construction activities would modify approximately 114 acres of designated Critical Habitat. The modification would be temporary as evidenced by the return of the habitat since the line was constructed.

Western would comply with the Endangered Species Act and obtain all necessary permits prior to the reconductoring activities. Mitigation requirements stipulated by the USFWS for all other federally-listed species for which "may affect, not likely to adversely affect" or "no effect" determinations are made would be adhered to by Western. Construction activities would also comply with the environmental protection measures identified in Table 2.3.

USFWS concurred with Western's determinations in a biological opinion dated October 19, 2007.

The Proposed Action would not jeopardize the continued existence of a federally-listed species, cause the loss of individuals of a population of species that would result in a change in species status, or adversely modify Critical Habitat to the degree it would no longer support the species for which it was designated.

No Action Alternative

The No Action Alternative would not affect special-status species to any greater extent than currently exists. More frequent repairs would be required as the transmission line increases in age and consultation with the USFWS may be required in the future. Western would implement its Standard Mitigative Practices when maintenance activities are required. Any vegetation removal required for maintenance or repair activities would be localized and spread out over time. The No Action Alternative would not jeopardize the continued existence of a federally-listed species, cause the loss of individuals of a population of species that would result in a change in species status, or adversely modify Critical Habitat to the degree it would no longer support the species for which it was designated.

3.2.5 Cultural Resources

Affected Environment

The past occupation and use of the project area was limited due to the harsh environmental conditions of the eastern Mohave desert, apart from a narrow strip near the Colorado River. This applies to both ancient and past Euroamerican use of the area. Therefore, the area surrounding the majority of the line is generally known to have very low site densities. Nevertheless, studies performed in the region have showed a diverse and virtually continuous, scattered occupation for at least 10,000 years (Bungart and Raney 2006). The most notable types of sites found in the area include ancient petroglyphs and rockshelters, mainly associated with limited water sources.

A Class III cultural resource survey of the project area was conducted between mid-November and mid-December 2005 (Bungart and Raney 2006). Prior to the survey, archival research for previous investigations and known cultural resource sites within 1 mile of the project corridor was undertaken. The archival research involved a search of the AZSITE database for the Arizona portion of the study area and files at the Harry Reid Center at the University of Nevada, Las Vegas for the Nevada portion of the project corridor.

On the Arizona side of the project, seven previous cultural resources projects had been completed near the project corridor. These projects resulted in the identification of two sites. On the Nevada side of the project, 25 cultural resources projects had been completed in the vicinity of the line. The sites located by these projects were primarily prehistoric lithic scatters and isolated prehistoric artifacts or historic utility lines. Two Tribes requested avoidance and monitoring of one previously recorded prehistoric site. The site is outside of the Area of Potential Affect and would be avoided; however, Western would monitor the site when construction activities occur in proximity to the site.

The intensive cultural resources survey undertaken for the Proposed Action was accomplished by four archaeologists using 15-meter-wide, parallel transects. Two transects were walked on each side of the existing powerline to cover the 200-foot-wide ROW. The locations of the tower structures and the access roads were also mapped and inventoried.

The survey identified two newly recorded prehistoric sites: a lithic scatter with possible features (Arizona) and a prehistoric petroglyph site (Nevada). Seventeen isolated occurrences (IOs) and 15 isolated features (IFs) were documented within the project area as well. The newly recorded sites are considered eligible to the National Register of Historic Places (NRHP). The historic Davis-Mead Transmission Line was also documented as a site but was not recommended as eligible for NRHP listing, and therefore, does not require further consideration or protection. The IOs and IFs are not recommended as eligible for the NRHP since their information potential has been exhausted by the survey-level recordation.

Environmental Consequences

A significant impact on cultural resources would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

- Damage to, or loss of a site of archaeological, Tribal or historical value that is listed, or eligible for listing, on the NRHP.
- Adverse impacts to NRHP-eligible properties that cannot be satisfactorily mitigated as determined through consultation with the State Historic Preservation Office (SHPO) and other interested parties.
- Loss or degradation of a traditional cultural property (TCP) or sacred site, or if the property or site is made inaccessible for future use.

Proposed Action

Under the Proposed Action, the two NRHP-eligible sites, which are located on NPS lands, would be avoided by all ground-disturbing activities. Avoidance means that no heavy machinery, equipment, or vehicles would enter the boundary of the two sites during construction activities. If conductor must be removed or strung through the areas where the sites occur, the conductor would be pulled by hand through the site, pulled using equipment outside of the perimeter of the site and then raised over the site, or pulled overhead by helicopter so that no ground disturbance occurs. If appropriate, archaeologists would flag the perimeter of the portions of the sites within work areas prior to construction to ensure that the sites are avoided by all direct impacts. The environmental protection measures identified in Table 2.3 would be implemented.

The Proposed Action would not damage or result in the loss of a site of archaeological, Tribal or historical value that is listed, or eligible for listing, on the NRHP. There are no known TCPs or sacred sites within the project area. Western determined the Proposed Action will have no adverse effect on historic properties provided Special Conditions of Compliance established for resources determined eligible to the NRHP were followed. The special conditions in Nevada consist of monitoring project activities at the site and requiring vehicles and equipment to remain on the existing access road with no upgrading or

realignment in the area of the site. In Arizona, the special conditions include monitoring project activities at the site; hand carrying the old and new conductors within site boundaries and a surrounding 50-foot-wide buffer area and transported outside the area prior to pulling or winding; and avoidance of the site and buffer area by equipment and vehicles. Concurrence on the no adverse effect determination was received from the Arizona SHPO on September 26, 2007 and from the Nevada SHPO on October 23, 2007.

No Action Alternative

Under the No Action Alternative, operation and maintenance practices used with the existing transmission line would continue. More frequent maintenance and repair activities would be required as the line continues to age. Western's Standard Mitigative Practices would be implemented when maintenance activities are required. NRHP-listed or eligible sites would be avoided or effects mitigated under the No Action Alternative. There would be no damage to or loss of a site of archaeological, Tribal or historical value that is listed, or eligible for listing, on the NRHP or known TCP or sacred site.

3.2.6 Visual Resources

Affected Environment

Visual resources reflect the aesthetic qualities of the landscape, such as scenic value and sensitivity to change. The majority of the existing transmission line traverses undeveloped areas dominated by desert vegetation. There are areas where the line is visible from residential areas, roadways, hiking trails, and the Colorado River. The southern portion of the existing line is located within the Lake Mead National Recreation Area. The line has been a part of the vista for over 50 years.

Environmental Consequences

A significant impact on visual resources would result if any of the following were to occur from construction or operation of the proposed Project or the No Action Alternative:

- Substantial dominant visual changes in the landscape that are seen by highly sensitive viewer locations such as community enhancement areas (community gateways, roadside parks, viewpoints, and historic markers,) or locations with special scenic, historic,

recreational, cultural, archaeological, and/or natural qualities that have been recognized as such through legislation or some other official declaration.

- Predicted air pollutant emissions causing a change in visibility that would exceed Class I standards.

Proposed Action

Temporary, short-term effects would result from the construction of the Proposed Action. During construction, visual effects would occur due to the minor removal of the vegetation in limited areas such as pull-station locations, fugitive-dust generation, increased traffic and transport of materials on local roads, and the presence of construction equipment and materials in the existing ROW. Initially, the new conductor would have greater reflectivity, and therefore, would be more visible than the aging, 50+-year-old conductor. This increased visibility would likely diminish over time. The greater visibility could have a positive effect with regard to reducing the potential for bird collisions with the transmission line. Therefore, construction and operation of the Proposed Action would not result in substantial dominant changes in the landscape. As noted previously in Air Resources, air pollutant emissions from the Proposed Action would not cause a change in visibility that would exceed Class I standards.

No Action Alternative

Continued maintenance and repair of the line would not change the aesthetic qualities of the landscape. The No Action Alternative would not result in substantial dominant changes in the landscape or cause a change in visibility that would exceed Class I standards.

3.2.7 Noise

Affected Environment

The existing transmission line occurs in a mostly rural setting on undeveloped lands. There are no noise receptors within 500 feet of the transmission line. Noise is one of the possible corona effects caused by the electrical breakdown of air into charged particles created by the electrical field at the surface of electrical conductors (Peek 1929). This effect is generally

associated with transmission lines operating at higher altitudes or at voltages of 345 kV or above. Audible noise may be present during inclement weather, but is not anticipated during most weather conditions. Noise from corona effects is typically masked by naturally occurring sounds at locations beyond the ROW, such as wind and rainfall.

Environmental Consequences

A significant impact to the environment would occur if sensitive receptors, such as residences, hospitals, or schools, or areas of ecological concern were exposed to harmful noise levels.

Proposed Action

Noise generated during construction activities associated with the reconductoring of the transmission line would be short-term and localized. Construction activities of this type usually generate noise in the range of 89 to 103 decibels (Eaton 2000). At over 500 feet, the noise would drop to about 40 to 50 decibels, which is equivalent to typical background noise. The noise that would be generated following reconductoring would not be perceptibly different from the noise generated by the existing transmission line. With implementation of the environmental protection measure identified in Table 2.3 regarding noise, the Proposed Action would not expose sensitive receptors or areas of ecological concern to harmful noise levels.

No Action Alternative

Maintenance or repair work required under the No Action Alternative would be short-term and localized. The majority of the line traverses undeveloped areas with no noise receptors within 500 feet of the line. With the implementation of Western's Standard Mitigative Practices regarding noise, the No Action Alternative would not expose sensitive receptors or areas of ecological concern to harmful noise levels.

3.2.8 Safety and Health Issues

Affected Environment

Potential safety and health concerns related to transmission lines include fire hazards associated with lightning strikes, concerns relating to electrical shock, and generation of electrical and magnetic fields (EMF). The overhead ground wires which protect the conductor from lightning strikes would remain.

Electric field strength is measured in units of kilovolts per meter (kV/m). The electric field increases with the size of the conductor. At the edge of the ROW (100 feet from centerline), the electric field of the existing line is 0.425 kV/m. Magnetic fields result from the flow of current through wires or electrical devices and are measured in units of gauss (G) or milligauss (mG). A magnetic field is independent of conductor size but proportional to the currents in the conductors (e.g., increases in strength as the current increases). For the existing line, the magnetic field at the electrical current of 427 amps is 11.46 mG at the edge of the ROW. The strengths of both the electric and magnetic fields are usually highest directly under the transmission line and decrease with distance away from the line.

The International Commission on Non-Ionizing Radiation Protection has established a continuous magnetic field exposure limit of 0.833 G (833 mG) and a continuous electric field exposure limit of 4.2 kV/m for the general public (Western 2005c). The American Council of Governmental Industrial Hygienists identified a Threshold Limit Value for occupational exposure to 60 hertz magnetic field as 10 G (10,000 mG) and 25 kV/m electric fields. Guidelines at the edge of ROW set by several states for newly constructed transmission lines are about 2 kV/m for electric fields and 200 mG for magnetic fields.

The existing transmission line has been in place for 50+ years with no documented adverse effects from EMF caused by powerline frequency. There is no conclusive evidence of adverse biological or human health effects from EMF (NIEHS 1999). The epidemiological evidence from both residential and occupational studies regarding an association between EMF and cancer or other adverse effects in humans is inconclusive and does not indicate a

causal link. The existing line was constructed to meet the applicable National Electrical Safety Code.

Environmental Consequences

A significant impact on safety and health would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

- Serious injuries to workers, visitors to the area or area land users.
- Creation of electric and magnetic fields near an existing or proposed sensitive land use, such as schools or hospitals, which would pose a plausible risk to human health.

Proposed Action

Due to the rural nature of the Proposed Action, potential impacts to public health and safety would be minimal. Electrical equipment of any kind can be a safety hazard, and special care must be taken when working near transmission lines to avoid hazardous situations. During construction, standard health and safety practices would be conducted following the Occupational Health and Safety Administration's policies and procedures. The Proposed Action is not expected to result in serious injuries to workers, visitors to the area or area land users.

Under the Proposed Action, the smaller diameter conductor would decrease the electric field. At the edge of the ROW, the electric field would be 0.398 kV/m.

The magnetic field would increase under the Proposed Action due to an increase in the electrical current. The maximum electrical current would be 1,148 amps during the summer; the maximum magnetic field would be 28.57 mG at the edge of the ROW. This level is well below the limits established by the International Commission on Non-Ionizing Radiation Protection, the American Council of Governmental Industrial Hygienists, and several states. The maximum magnetic field from the Proposed Action is also comparable to levels of magnetic fields measured near common household appliances, as shown in Table 3.2.

Table 3.2 Typical 60 Hertz Magnetic Field Values from Some Common Home Appliances		
Appliance	Magnetic Field 6 Inches Away From Appliance (mG)	Magnetic Field 2 Feet Away From Appliance (mG)
Electric shaver	100	-
Vacuum cleaner	300	10
Electric oven	9	-
Dishwasher	20	4
Microwave oven	200	10
Hair dryer	300	-
Computer	14	2
Fluorescent light	40	2
Faxogram machine	6	-
Copy machine	90	7
Garbage disposal	80	2

Source: Western 2005c

Population density in the majority of the project area is low and few if any individuals would experience long-term exposure to EMF. The EMF at the edge of ROW would be well below limits and guidelines set by others. Therefore, the Proposed Action would not create electric and magnetic fields that would pose a plausible risk to human health.

No Action Alternative

The existing transmission line associated with the No Action Alternative has been in place for 50+ years with no documented adverse effects from EMF. Therefore, the No Action Alternative would not pose a plausible risk to human health from the EMF. Maintenance and repair work would be localized and of short duration, minimizing the potential for serious injuries to workers or the public.

3.2.9 Environmental Justice

Affected Environment

Executive Order 12898, dated February 11, 1994, established the requirement to address environmental justice concerns within the context of Federal agency operations.

Environmental justice concerns include any adverse affect on minority and low-income populations within a given study area. Key indicators reviewed for environmental justice include minority populations, poverty rates, and income within a community.

According to the U.S. Census Bureau's 2000 data, the highest racial population in the study area is identified as white (Caucasian), which represents 95 percent of the area studied (U.S. Census Bureau 2000). The minority populations comprise the remainder of the population (5 percent). Individuals below the national poverty level found within the study area represent 15 percent of the population.

Environmental Consequences

A significant impact upon environmental justice issues would result if any of the following were to occur from construction or operation of the Proposed Action or the No Action Alternative:

- A disproportionate negative effect on minority or low-income populations in the area, as defined by EPA criteria.
- The affected minority or low-income populations were not informed of and offered an opportunity for meaningful involvement to assure that their interests and concerns about the Proposed Action would be considered.

Proposed Action

Reconductoring the existing transmission line would occur within the existing ROW. No new ROW is required for the Proposed Action. No land uses would change as a result of the Proposed Action. Population is sparse in the vicinity of the project area and no residential or community displacements would occur. No population would be affected by reconductoring the existing line. Therefore, the Proposed Action would not have a disproportionate effect on minority or low-income populations in the area. As noted in Chapter 1, Native American Tribes were contacted about the Proposed Action and given the opportunity to express their concerns and interests. Comments about cultural resources were received from the Hualapai Tribe, Hopi Tribe, Quechan Indian Tribe, Cocopah Indian Tribe, and the Navajo Nation.

No Action Alternative

All required maintenance and repair activities required for the existing line would occur within the existing ROW. Population is sparse within the vicinity of the existing line. Any power outages that may occur due to the aging of the conductor would affect all populations that rely on this line to meet their energy needs. The No Action Alternative would not have a disproportionate effect on minority or low-income populations in the area.

3.3 Cumulative Impacts Analysis

This section addresses potential cumulative impacts to the environment that could be associated with the Proposed Action when added to other past, present, or reasonably foreseeable future actions or projects. Specifically, this section is prepared in accordance with the requirements of NEPA and guidance from the CEQ, *Considering Cumulative Effects under the National Environmental Policy Act*. The CEQ regulations define a "cumulative impact" for purposes of NEPA as follows:

> Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR §1508.7).

The following factors were considered in identifying those past, present, or reasonably foreseeable projects that could result in cumulative impacts to the area's resources:

- Projects that have an application for construction and/or operation pending before an agency with permitting authority.
- Projects that have the potential to generate environmental impacts that, when addressed collectively with the Proposed Action, could result in cumulative impacts to the environment.

- Projects that are of a similar character, could affect similar environmental resources (resource base), or are located in geographic proximity to the Proposed Action.

3.3.1 Other Projects in the Vicinity of the Proposed Action

- Harry Allen Mead 500-kV Transmission Line—The project consisted of 48 miles of new 500-kV transmission line running east of the greater Las Vegas area to the Mead Substation. Project completed.
- Ivanpah Energy Center—500-megawatt, gas-fired generating station in Eldorado Valley. Reasonably forseeable.
- Searchlight Groundwater Exploratory Wells—Las Vegas Valley Water District well exploration. Ongoing project.
- Nevada Solar One—64-megawatt, commercial-scale solar energy plant encompassing 350 square acres and consisting of mirrored troughs that concentrate sunlight and convert it into 750° (F) thermal energy. This energy can then be used to create steam for electrical power generation. This project is located in Eldorado Valley and the facility went online in March 2007.
- Navajo Transmission Project—500-kV transmission line from Shiprock, New Mexico to either the Mead Substation or the Marketplace Substation. Original environmental impact statement submitted in August 1995. Reasonably forseeable.
- Boulder City, US-93 Bypass—Project consists of 10.4 miles of new highway construction traversing just north of the Mead Substation. Public scoping occurred in February 2007. Reasonably forseeable.
- There are existing structures and rights-of-way belonging to private utilities in the project area, including Nevada Power, Los Angeles Department of Water and Power and Southern Nevada Water Authority, to name a few.
- Residential development is widespread in southern Nevada and is expected to continue. The Clark County Desert Conservation Plan should limit the effects of this growth somewhat in the project area. Mohave County, Arizona is also experiencing rapid growth as evidenced by residential and infrastructure development in and around Bullhead City.

3.3.2 Cumulative Impacts

This section analyzes whether the proposed reconductoring project, when combined with other projects in the area, would incrementally increase either short-term or long-term significant cumulative environmental impacts. The same significance criteria as defined for each resource analyzed in Section 3.2 are used in the cumulative impacts analysis.

3.3.2.1 Soils

Compaction and erosion of disturbed soils may occur during construction activities, although implementation of soil protection measures would minimize these impacts. At the completion of construction, disturbed areas are generally scarified and revegetated. Long-term soil compaction and erosion would be minimal. Western would implement the environmental protection measures identified in Table 2.3 to minimize impacts to soils from the Proposed Action. The incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the soils significance criteria developed for the Proposed Action.

3.3.2.2 Surface Water Resources

Compliance with regulations and permitting requirements and implementation of best management practices would ensure that state or Federal water quality standards are not exceeded, projects would not impede or redirect flood flows that would result in property damage on- or off-site, and work in drainages would not cause adverse effects to adjacent properties. Placement of fill material into jurisdictional waters of the U.S. would comply with the terms and conditions of the appropriate permits and water quality certifications required under the CWA and/or the Rivers and Harbors Act. Western would implement the environmental protection measures identified in Table 2.3 and permit and certification requirements to minimize impacts to surface water resources from the Proposed Action. The incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the surface water resources significance criteria developed for the Proposed Action.

3.3.2.3 Air Quality

Temporary air emissions would occur as a result of the operation of construction equipment and vehicles and from air-borne dust generated during earth-moving and other construction activities. Contractors would implement best management practices and obtain dust control permits where required to minimize impacts to air quality. Western would implement standard dust suppression practices such as dust-control watering of disturbed areas to mitigate an increase in air-borne dust. Although short-term air-borne dust may combine with that from other concurrent projects, there would be no long-term air emissions associated with the operation of the Proposed Action. Western would implement the environmental protection measures identified in Table 2.3 to minimize impacts to air quality from the Proposed Action. The incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the air resources significance criteria developed for the Proposed Action.

3.3.2.4 Biological Resources

All projects would result in some temporary and/or permanent disturbance to vegetation. In some cases mitigation may have been required for permanent losses, especially for wetlands and riparian vegetation. The Proposed Action would not impact wetlands and riparian areas would be avoided to the extent possible.

Loss of habitat would result in direct impacts to wildlife. Short-term impacts would occur during construction due to elevated noise levels and increased human presence. Long-term impacts could occur as a result of permanent loss of habitat. Where projects require state or Federal permits, compliance with resource protection measures would minimize impacts.

All projects, whether federally or privately funded, must comply with the take prohibitions of the ESA. Given the potential for the Proposed Action and the other actions to affect the Mojave desert tortoise, the Proposed Action may contribute to the long-term impacts to the species. With proper monitoring protocols and adherence to the USFWS mitigation measures, these cumulative impacts would be significantly minimized.

To minimize impacts to biological resources from the Proposed Action, Western would implement the environmental protection measures identified in Table 2.3 and any conservation measures that result from ESA consultation with the USFWS. The incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the biological resources significance criteria developed for the Proposed Action.

3.3.2.5 Cultural Resources

All NRHP-eligible historic properties would be avoided by the proposed reconductoring activities. Therefore, the incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the cultural resources significance criteria developed for the Proposed Action.

3.3.2.6 Visual Resources

The Proposed Action is considered a maintenance activity with no new facilities planned. The new conductor would only temporarily change the visual characteristics of the area. Thus, the incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the visual resources significance criteria developed for the Proposed Action.

3.3.2.7 Noise

The noise contribution associated with the Proposed Action would be short-term during construction and would resume to current levels following reconductoring. Thus, the incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the noise significance criteria developed for the Proposed Action.

3.3.2.8 Safety and Health

The Occupational Safety and Health Act was passed by Congress to ensure worker and workplace safety. Safety programs for construction, operation, and maintenance activities

would be implemented to comply with all applicable Federal, state, and local safety standards and requirements.

EMF has been identified as a safety and health concern associated with transmitting electricity. Under the Proposed Action, the electrical field would be lower than for the existing line. Although the magnetic field would increase under the Proposed Action, it would be well below limits and guidelines set by others and would not pose a plausible risk to human health. Thus, the incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the safety and health significance criteria developed for the Proposed Action.

3.3.2.9 Environmental Justice

No population, including minority and low income, would be affected by the Proposed Action. Thus, the incremental effects of the Proposed Action, when added to other projects in the vicinity, would not exceed the thresholds defined in the environmental justice significance criteria developed for the Proposed Action.

4.0 AGENCIES AND TRIBES CONSULTED

Western notified interested parties about the Proposed Action to obtain input regarding alternatives to be evaluated and issues to be addressed. These efforts were part of the scoping process, as defined by CEQ's regulations for implementing NEPA (40 CFR Parts 1500-1508) and the DOE NEPA Policy Guidebook. The NPS is a cooperating agency, and their NEPA guidelines and NEPA specialists were also consulted to ensure compliance with their respective guidelines. Issues and concerns identified during the scoping process by the following entities were considered in preparation of this EA.

Federal

Bureau of Land Management, Las Vegas Field Office
National Park Service, Lake Mead National Recreation Area
U.S. Fish and Wildlife Service, Las Vegas Field Office

Tribal

Chemeheuvi Tribe
Fort Mojave Tribe
Havasupai Tribe
Hualapai Tribe
Las Vegas Paiute Tribe
Moapa Band of Paiute Tribe
Pahrump Paiute Tribe

State, County, Local

Boulder City, Nevada
Nevada Division of Environmental Protection, Bureau of Water Quality Planning, Carson City, Nevada
Arizona Department of Environmental Quality, Phoenix, Arizona

Utilities

Mohave Electric Cooperative
Nevada Power Company

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