ANNUAL SITE ENVIRONMENTAL REPORT

FOR CALENDAR YEAR 1995

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

United States Department of Energy
Western Area Power Administration
Division of Environmental Affairs
1627 Cole Boulevard
Golden, Colorado 80401

DOE/WP16151-9(95)

PREFACE

The Western Area Power Administration (Western) has established a formal environmental protection, auditing, monitoring, and planning program that has been in effect since 1978. The significant environmental projects and issues Western was involved with in 1995 are discussed in this annual site environmental report. It is written to show the nature and effectiveness of the environmental protection program.

The Department of Energy Order 231.1, Chapter II.4, requires the preparation of an annual site environmental report. Because Western has over 400 facilities located in 15 states, this report addresses the environmental activities in all the facilities as one "site."

DISCLAIMER

BS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

The Western Area Power Administration (Western) was established on December 21, 1977, pursuant to Section 302 of Public Law 95-91, the Department of Energy Organization Act dated August 1, 1977. Western is responsible for the Federal electric power marketing and transmission functions in 15 central and western states encompassing a 1.3 million-square-mile geographic area (Figure 1).

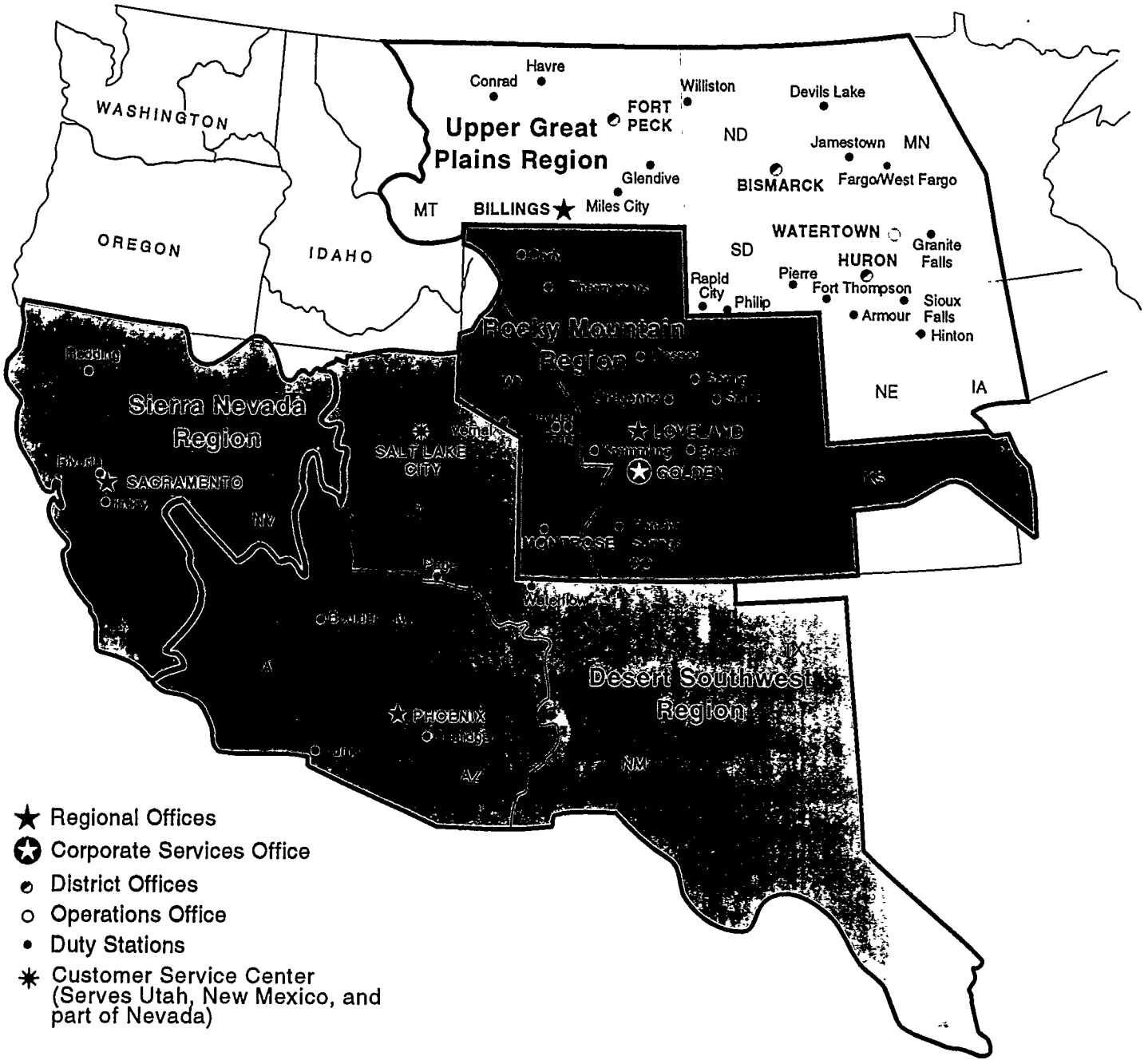
In 1995, Western began undergoing a transformation process to improve customer service and streamline a number of processes. The results of this transformation are not yet final, but Western has pared down to four customer service regional Offices, reduced the ratio of supervisor to employee and still provided power to more than 600 wholesale power customers. These consist of rural cooperatives, municipalities, public utility districts, investor-owned utilities, federal and state agencies, irrigation districts, and project use customers. The wholesale power customers, in turn, provide service to millions of retail consumers in the States of California, Nevada, Montana, Arizona, Utah, New Mexico, Texas, North Dakota, South Dakota, Iowa, Colorado, Wyoming, Minnesota, Nebraska, and Kansas.

Western operates and maintains nearly 17,000 miles of transmission lines, 257 substations, and various appurtenant power facilities in the states listed above. Western is also responsible for planning, construction, and operation and maintenance of additional federal transmission facilities that may be authorized in the future. Electric power marketed by Western is generated by the Bureau of Reclamation (BuRec), the U.S. Army Corps of Engineers (Corps), and the U.S. Section of the International Boundary and Water Commission (IBWC). There is a combined total of 55 hydroelectric power generating plants in the service area. Additionally, Western markets the United States entitlement from the Navajo coal-fired plant near Page, Arizona. The maximum operating capability that Western currently markets is more than 10,000 megawatts (MW). In 1995, Western sold over 36-billion kilowatt hours (kWH)of electricity that generated more than $714 million in revenues.

Western's organization consists of the Corporate Service Office located in Golden, Colorado, four Regional Offices located in Billings, Montana; Phoenix, Arizona; Loveland, Colorado; and Folsom, California, and the Colorado River Storage Project Customer Service Office, located in Salt Lake City, Utah. Figure 1 shows the Western marketing area. Through its power marketing and transmission program, Western secures revenues to meet the annual costs of operation and maintenance of transmission facilities, purchased power, wheeling, and other expenses. Western is required to repay within allowable time periods all the power investment plus interest as well as the portion of the Government's irrigation and other non-power investments beyond the water users repayment capability.

FIGURE 1

DUTY LOCATIONS



2.0 SUMMARY

Many state and federal environmental protection laws and regulations are applicable to Western. Western facilities are within the jurisdiction of six Environmental Protection Agency (EPA) regions and 15 states. To help assure conformance with all regulatory requirements, Western is developing an Environmental Management System (EMS)in accordance with draft DOE 450.1, for Headquarters and each of the Regional Offices. The EMS will establish environmental protection programs that define Western's environmental compliance program, the overall environmental protection and pollution prevention goals and objectives. Western is taking action to prevent, control, and abate environmental pollution at facilities under its control.

One of the major regulatory impacts upon Western continues to be the Toxic Substances Control Act (TSCA) that regulates the use of polychlorinated biphenyls (PCB). Western's policy is to eliminate PCBs from its system wherever economically and operationally possible in order to lessen the impact of PCB regulations.

Executive Order 12856 requires Federal Agencies to comply with the Emergency Planning and Community Right-to-Know Act (EPCRA). As with other DOE elements, Western has been complying with EPCRA since before the Executive Order was issued. To summarize, in 1995 Western notified state and local emergency response entities in accordance with Section 311 and 312 of EPCRA, but was not required to prepare Planning notifications, Release notifications, or Toxic Release Inventory reports as required by the other Sections of EPCRA.

Electric and magnetic field (EMF) effects of alternating current (AC) and direct current (DC) power transmission remain a concern in the decision-making process under the National Environmental Policy Act (NEPA). Increased public awareness has also added impetus for additional research in the area of EMF effects. Western continues to monitor the research efforts underway in these areas and is a participant in a study coordinated by Bonneville Power Administration that exposes sheep to high voltage AC fields.

Throughout 1995, Western's environmental planning process continued toward increasingly early public and agency involvement in proposed projects. This emphasis on early scoping of environmental issues, which follows the amended DOE Guidelines for Compliance with NEPA, helps to identify significant impacts.

Western determines the appropriate level of environmental documentation by its policy of pre-scoping and increasing the level of public and agency participation in project development.

In July 1994, Western was delegated the authority to approve its own environmental assessments (EA) as part of its NEPA program. This authority has shortened the environmental process and provided for project decisions to be made closer to the project level. Additionally, the Regional Offices have been delegated the authority to approve their own categorical exclusions determinations.

Large scale projects and projects with a high potential for significant environmental impacts are analyzed within the framework of EAs and impact statements. Most Western projects result in minimal environmental impacts with appropriate planning and mitigation.

More comprehensive official participation by the Advisory Council on Historic Preservation earlier in the planning process has streamlined Western's cultural resource compliance activities. Monitoring of project implementation through public and agency feedback has improved planning methods.

3.0 COMPLIANCE SELF-ASSESSMENT

3.1 COMPLIANCE STATUS

Western operates in compliance with environmental and other requirements established by federal, state, and local statutes and regulations, Executive Orders, Department of Energy Orders, and agreements with federal, state, and local regulatory agencies. The following paragraphs summarize Western's compliance status with the major environmental statutes.

3.1.1 Resource Conservation and Recovery Act (RCRA)

Since 1984, many regulations have been proposed or finalized as a result of the Hazardous and Solid Waste Amendments of 1984 (HSWA). HSWA-based regulations impact Western most facilities classified as small quantity generators of hazardous waste. HSWA may also impact Western operation by prohibiting the land disposal of hazardous wastes and setting standards for used oil management, underground storage tanks and recycling hazardous wastes.

The State of California requires that disposal of "extremely hazardous wastes" be permitted on a case-by-case basis. The state considers PCBs at a concentration of greater than 5,000 ppm as an "extremely hazardous waste".

3.1.1.1 Underground Storage Tanks (UST)

California requires the annual renewal of permits to operate underground storage tanks. Through the monitoring and updating of permits, Western continued to comply with California underground storage tank regulations during 1995.

Western removed underground storage tanks at the following facilities: Sherman Hills substation, Wyoming and Mead Substation, Nevada. Closure of all tanks was in accordance with state regulations.

3.1.2 Toxic Substances Control Act (TSCA)

Western continued the removal and proper disposal and/or recycling of PCBs from facilities during 1995. Each Regional Office will obtain its own PCB transportation and disposal contract with the understanding that some cross-regional collaboration will keep costs down and provide some consistency in keeping the paper trail. The contractor will transport and dispose of the PCBs and prepare all necessary paperwork, including certificates of destruction or disposal.

3.1.3 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Congress passed the Superfund Amendments and Reauthorization Act (SARA) of 1986, which revised and expanded CERCLA. Since 1988, twenty-three of Western's facilities have been placed on the Federal Agency Hazardous Waste Compliance Docket (Docket). This is a listing of facilities under Federal control which have the potential for environmental releases which could adversely affect human health or the environment. Most of the facilities listed (fourteen) were deleted from the Docket in 1991 because they are conditionally exempt small quantity generators. Nine of the remaining thirteen have been given "No Further Action Required" (NFRAP) or "Site Evaluation Accomplished" status. The remaining four are still active on the Docket. Three are waiting for a response from EPA and the fourth, Fort Morgan substation, was placed on the Docket in April 1995. EPA Region VIII was advised of a potential for an environmental release from the Substation in October, 1994. Western performed a Preliminary Assessment/Site Inspection and submitted it to Region VIII in January, 1995. In March, 1995, Western received a letter from Region VIII stating that the substation was being given NFRAP status.

March, 1995, Western received a letter from Region VIII stating that the substation was being given NFRAP status.

Western does not have any sites currently listed on the National Priority List (NPL), but the Agency has taken a proactive role by implementing a Facility Evaluation Program. The purpose of this program is to evaluate all Western facilities for sources of and suspected releases of oil, hazardous substances, pollutants, or contaminants into the environment. Western has also pro-actively conducted Preliminary Assessments and Site Investigations (PA/SI) at sites which could have the potential for contamination. This process continued in 1995.

In 1990, the Secretary of Energy committed all elements of the Department of Energy to complying with the Emergency Planning, Community Right-to-Know Act (EPCRA), which is a part of CERCLA. Subsequently, Executive Order 12856, committed all executive agencies to comply with EPCRA. Western has completed chemical inventories throughout its fifteen-state service area to determine if we meet reporting requirements of the various sections of EPCRA. They are no threshold quantities of extremely hazardous materials at any of Western's facilities. Western has advised state and local emergency response entities of our chemical inventories and their locations at our facilities. Western does not manufacture, process or otherwise use reportable quantities of any of the extremely hazardous or hazardous materials identified in EPCRA.

3.1.4 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

Western is required to comply with the use, storage, and disposal regulations contained in FIFRA and individual state pesticide management programs. Pesticides are used by Western to control unwanted vegetation and animals, and for wood preservation.

During 1995, Western continued to implement Integrated Pest Management (IPM) methods. Western has developed a program which addresses the control of vegetation at facilities and along transmission line rights-of-way (ROW). This program combines mechanical, biological, and chemical methods in a way that minimizes economic, health, and environmental risks. Herbicide risk assessments will be conducted to serve as a screening process for the development of a Western-approved herbicide use list. Herbicides can then be selected from this approved list for use by Western and/or contract applicators. Western is also evaluating

herbicides for their potential for groundwater and surface water contamination. By setting limits on known physical and chemical characteristics of herbicides which influence leaching potential mitigation measures will be outlined which are known to reduce the likelihood of herbicide contamination risks to human health and the environment. In addition, a program is being developed to monitor herbicide residues in soil and water to determine the concentrations or persistence of these chemicals in the environment. Specific application and management guidance has been identified and incorporated into the vegetation management program.

The manual will also provide users with useful information for managing vegetation and provide for the safe and correct application of chemicals (herbicides) to control vegetation around Western facilities. The Integrated Vegetation Management manual will serve as supporting document for training of individuals involved with either for bare ground control at substations, maintenance yards and/or those land areas under transmission lines requiring spot treatment or danger tree management. The manual contains Western's noxious weed policy and danger tree management guidance according to the newly instituted Western Order 6460.1, Right-of-way Management Guidance for Danger Trees, Encroachments, and Access Routes. The manual is intended to provide information needed to meet the standards of the U.S. Environmental Protection Agency for commercial certification as a pesticide applicator in the category Right-of-Way Pest Control. The users of this document must rely upon their knowledge of historic and current facility vegetation management methods and their professional judgement to determine the applicability of each vegetation management method or procedure. The manual will be distributed throughout 1996. This document is a working manual for the next year with revisions or additional information to be included in future updates. Revisions are to be expected as regulations change, and as the manual is put into Western-wide use.

A study was conducted by Western's Division of Environment in collaboration with the Bureau of Reclamation to determine the efficacy of various chemical and physical methods of vegetation management for bare ground (total) control of vegetation at a substation located in Northeastern Colorado (Ft. Morgan West Substation). The substation was graveled and treated with two soil-applied herbicides. In addition, several geosynthetic materials were installed to test their usefulness in controlling the growth of vegetation. Through the use of geosynthetic

materials it is hoped that better or equal control of vegetation in substations and storage yards, rights-of-way, and other industrial areas can be achieved, reducing the use of soil-applied herbicides. One of the materials being tested is a geotextile fabric impregnated with time-release herbicide nodules. Preliminary results of the study will be released in 1996.

Statements of work were written to conduct contractor application of herbicides in Northern California to control unwanted brush around transmission towers. Federal approval for application of herbicides on public lands will require the preparation of an Environmental Assessment. The method of selecting a contractor will be based on technical merit/cost and a request for proposal. Actual herbicide applications will take place during 1996 and 1997.

A Pest Control Guidance Manual was written as an aid to the control of unwanted pests (including certain rodents, birds, insects, and fungi) at Western's substations, yards, storage facilities, and along transmission lines. The manual will provide users with useful information for managing pests and provide for the health and safety of Western employees and the general public. Guidance has been developed for the disposal of chemically treated wood poles and cross arms and the control of rodent/bird damages at Western facilities. This manual will be distributed throughout 1996.

In compliance with the Federal Noxious Weed Act of 1974, as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990, and State/ County noxious weed management legislation, Western has written draft policy guidance for the management of noxious weeds identified by State and County weed management laws on Western fee-owned and nonfee-owned (easements, ROW, permits, etc.) land. Western has entered into interagency agreements and county cooperative agreements for assistance with control of noxious weeds.

The annual selection of contractor services for control of vegetative growth within substations and maintenance yards has been updated to include the submittal of the contractors' technical qualifications along with cost information. The contractor is selected based upon technical merit as well as cost proposal. In addition, the scope of the statement-of-work for

annual chemical control of vegetation has been expanded to include the control of State and County targeted noxious weed species on Western fee-owned land.

3.1.5 Clean Air Act (CAA)

Several potential sources of air emissions exist at Western facilities that are regulated under the CAA: dust during construction activities; friable asbestos during building renovation or demolition; and volatile organic compounds emissions from gasoline dispensing facilities. Western's construction specifications require such practicable methods and devices that are available to control, prevent, and otherwise minimize emissions or discharges of air contaminants during construction activities. Particulate (dust) emissions from construction activities are prevented by periodic watering of disturbed soils on access and haul roads.

Regulatory requirements applicable to the disposal of asbestos and asbestos-containing material affect Western when activities are planned to modify or demolish existing buildings. Surveys to identify and quantify asbestos in Western facilities were initiated in 1988. The results of these surveys indicated the presence of asbestos in some older buildings. Western personnel notify all appropriate regulatory agencies when planning renovation and demolition projects. In addition to the Federal regulations, State and local laws and regulations are followed to assure proper disposal of asbestos containing material.

Executive Order 12843, "Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances," the Environmental Protection Agency (EPA) regulations that implement section 613, "Federal Procurement," of the CAA, and an interim rule, "Federal Acquisition Regulation; Ozone Executive Order," require Federal agencies to significantly reduce use, where practicable, of ozone-depleting substances, through cost-effective procurement practices and through the substitution of safe alternative substances, and to provide leadership their phaseout. The phaseout of ozone-depleting substances affects Western's operations associated with refrigeration and air conditioning, fire protection, and solvent usage. Safe alternatives are being used instead of ozone-depleting chemicals to the extent practicable. Ozone-depleting substances are recovered in air conditioning and refrigeration systems and fire suppressions systems before final disposal and/or dismantling of equipment.

Technician certification is required for all individuals who maintain, service, or repair, or dispose of appliances (except for small appliances) if such activity could reasonably be expected to release class I or class II refrigerants. Technician certification is also required for servicing motor vehicle air conditioners (MVAC) and MVAC-like appliances. Facilities have either acquired approved recovery equipment and training for technicians or contracted for such services that have EPA approval to comply with sections 608 and 609 of the CAA.

In following "Guidance on the DOE Facility Phaseout of Ozone-Depleting Substances," requiring compliance with Executive Order 12843, Western will identify and inventory present and future uses of ozone-depleting substances and report that information to DOE.

Several potential sources of air emissions exist at Western facilities that are regulated under the CAA: dust during construction activities; friable asbestos during building renovation or demolition; and volatile organic compounds emissions from gasoline dispensing facilities and cold solvent cleaners.

In arid regions, Western requires that all disturbed areas and roads be watered during construction activities to reduce particulate (dust) air pollution.

Asbestos regulations under the National Emission Standards for Hazardous Air Pollutants affect Western when any work is planned to modify or demolish existing buildings. Surveys to identify and quantify asbestos in Western facilities were initiated in 1988. The results of these surveys indicated the presence of asbestos in some older buildings.

Some states also regulate the removal and disposal of friable asbestos. Western personnel notify all appropriate regulatory agencies when planning renovation and demolition projects, and assure proper disposal of asbestos wastes.

A Refrigerant Working Group composed of individuals from various parts of Western has been formed to develop strategies to comply with Sections 608 and 609 of the CAA. A consensus of the group was to inventory all equipment containing ozone-depleting refrigerants to comply with regulations and plan for the phase out of ozone-depleting substances. Technician certification became mandatory November 14, 1994, for all individuals who service air conditioning and refrigeration equipment. This includes motor

vehicle air conditioners (MVAC) and MVAC-like appliances under Section 609 of the CAA. Facilities will have to acquire approved equipment and training for technicians, or contract for such services that have EPA approval, to conform to the refrigerant recycling rule. Facilities will also have to implement procedures to ensure that leaks are repaired and records are kept in accordance to the regulations. The equipment used for servicing also needs to be able to comply with the applicable requirements.

3.1.6 Safe Drinking Water Act (SDWA)

3.1.6.1 Underground Injection Control (UIC)

As required by UIC regulations, Western has completed an inventory of wells at all its facilities. All wells found to date, at the facilities, are considered Class V injection wells.

These consist mostly of floor drains within some battery rooms, subsurface cable ways and vehicle maintenance buildings which are connected to dry wells. Some air compressors used on power circuit breakers send small quantities of blow-by oil into dry wells. The Area Offices are working with EPA regions and states to obtain permission to permanently abandon the battery and oil room injection wells, as needed, and to close the wells accepting the blow by from air-blast breakers. Additionally, some septic systems used to dispose of sanitary waste qualify as injection wells. Western is eliminating the use of injection wells at their new facilities and has plugged the drains from washbays and maintenance facilities leading to dry wells or septic systems at a number of facilities.

3.1.7 Clean Water Act (CWA)

3.1.7.1 Spill Prevention, Control, and Countermeasure Plans (SPCC)

The discharges from the facilities Western owns and operates are generally not regulated under the CWA and other water pollution control laws and statutes. Most of Western's facilities do not generate effluent except for stormwater runoff. New stormwater discharge regulations have impacted some of Western's facilities.

In 1990, Western identified unpermitted point source discharges at some of its larger facilities where floor drains were found to connect to storm sewer drainage systems. Most of the discharges are to dry ditches along public roadways next to the facilities. These were corrected in 1991 and 1992 as part of the Facility Evaluation Program. The purpose of this program is to evaluate all Western facilities for sources of and suspected releases of oil, hazardous substances, or other contaminants into the environment.

Western facilities using or storing oil must assess the potential for spilled oils to reach navigable waters or their tributaries. If the potential exists, Western develops and implements Spill Prevention, Control, and Countermeasure (SPCC) plans, including appropriate provisions for diversion and secondary containment.

SPCC plans are reviewed every three years and amended, if necessary. All new and amended plans are recertified by a registered professional engineer. About 30 facility SPCC plans were reviewed, amended, or recertified in 1995. Water pollution control regulations found in 40 CFR §112 also provide guidelines for types of structures to prevent spilled oil from reaching navigable waters. Western follows these guidelines when designing new facilities or refurbishing existing substations.

National Pollution Discharge Elimination System (NPDES) Phase II Multi-sector Permits for Industrial activities may impose storm water permit requirements on certain vehicle maintenance facilities and construction activities. This tendency for Storm Water Pollution Prevention Plans and SPCC planning requirements to overlap will affect Western's water protection programs in the future.

3.1.8 Hazardous Materials Transportation Act (HMTA)

Almost all of the hazardous and toxic materials transported for Western is shipped via permitted hazardous materials contracted commercial haulers. However, trained and qualified Western employees occasionally transport hazardous materials from one facility to another, mainly for consolidation purposes.

Hazardous materials transportation requirements for the California Department of Health Services are more extensive than those of the U.S. Department of Transportation (DOT). Therefore, the Sierra Nevada and Desert Southwest Regional Office's must have a California waste hauler's permit for the transportation of Polychlorinated Biphenyl (PCB) material.

Western environmental compliance staff developed a training program in 1993, which addresses the requirements of HM (Hazardous Material)-126F for the safe transportation of hazardous materials, with emphasis on Western's operations; the program is updated on an annual basis. The training program is modeled after the DOE's Hazardous Material Modular Training Program which was developed in conjunction with U.S. DOT, Research and Special Programs Administration (RSPA), Office of Hazardous Materials Transportation.

HM-126F requires that all instructors who present the safe transportation of hazardous materials training course be re-certified every two years. Environmental compliance personnel from the Corporate Service Office and Rocky Mountain Regional (RMR) Office attended and successfully completed the DOE/DOT Hazardous Materials (Hazmat's) Compliance and Enforcement Course held in Washington, D.C., from August 7-11, 1995.

On February 1, 1995, they presented the Safe Transportation of Hazmat Refresher Course in Montrose, CO, to 34 Montrose Power Operations Center (MPOC) personnel; and on February 15, 1995, the Initial Course was presented to 9 MPOC personnel. Both training courses were presented during the All-Hands Safety week. On December 4 & 5, 1995, they presented the Refresher Course in Loveland, CO, to 14 Western personnel.

DOT regulates Western's transportation of hazardous wastes and PCBs. DOT also regulates transport of gasoline and other fuels for use in construction equipment, batteries for use in substations, battery acid, compressed gases, especially nitrogen, sulfur hexafluoride and acetylene, and bulk quantities of waste electrical oil.

3.1.9 National Historic Preservation Act (NHPA)

During 1995, Western initiated or continued previous cultural resource compliance efforts for 36 projects in 10 states. The projects included the construction and maintenance of substations,

microwave communication facilities, electrical transmission lines, access roads, site monitoring and site mitigation. In accordance with Section 106 of the NHPA, as amended, Western solicited the comments of the State Historic Preservation Officer(s) in 10 states regarding these projects. In addition, Western consulted with 18 Indian tribes in consultation with projects in these states. This allowed Western to evaluate cultural resources within the proposed project areas and identify potential effects of the projects on significant cultural resources. Plans to mitigate potential project effects included avoiding, monitoring, testing, and excavation.

3.1.10 Native American Graves Protection and Repatriation Act (NAGPRA)

In accordance with the requirements of NAGPRA, Western initiated consultation with several tribes and intertribal groups to establish procedures to take into account human remains, items of cultural patrimony, and other issues not directly related to Section 106 of the NHPA. Consultations with the North Dakota Intertribal Reinterment Committee, representing the governments of four reservations in North Dakota, have resulted in a Memorandum of Understanding that will cover the treatment of human remains should they be disturbed in the course of Western projects within the tribes ancestral homelands. The agreement document should be signed in early 1996. Western has initiated consultations with several tribes in Arizona, California and Nevada in an attempt to take into account impacts of Western projects on an area near Spirit Mountain in eastern Nevada. The tribes have a strong spiritual affiliation with the mountain.

3.2 CURRENT ISSUES

The DOE Office of Audit conducted a Line Program Environmental Management Audit in December 1991. A total of 19 findings were identified by the audit team. Seven of the 19 findings were compliance findings, in that the audit team felt that Western was not in compliance with DOE Orders. The remaining 12 were "Best Management Practice" findings. Western received the final audit report May 22, 1992, and submitted a final remedial action plan July 30. Department approval was received August 28, 1992. Listed below is a table of the activity on the remedial action items for calendar year 1994.

FINDINGS	REMEDIAL ACTION ITEM	DATE COMPLETED
OS/BMPF-2	Identify Personnel needing environmental language in their job descriptions. Prepare letter to rewrite job descriptions. Review existing job descriptions. Review existing performance standards. Apply existing job descriptions. Apply existing performance standards. Develop environmental job descriptions as needed. Develop environmental performance standards as needed.	Completed 2/95 In progress DOE lead Completed 2/95 DOE revising In progress In progress Completed
CA/BMPF-1	Implement a documented periodic Western-wide environmental Self-Assessment Program to provide Senior Management with information on the status of Western's environmental performance.	Drafted
SR/BMPF-1	Perform analysis of current and projected staffing needs for Headquarters Division of Environmental Affairs.	Completed 10/95
SR/BMPF-2	Provide environmental awareness training to all line personnel and key managers.	Ongoing[1]
EP/CF-1	Develop Meteorological Monitoring Plan Develop Groundwater Monitoring Plan Develop program for evaluating and permitting surface water discharges (Stormwater Pollution Prevention Guidance Manual) Begin implementation of Western-wide Waste Minimization and Pollution Prevention Program Develop Western-wide Environmental Monitoring Plan Implement the Western-wide Groundwater Protection Management Program.	Not done April, 1994 Completed 1/95 2/94 Completed 12/95 Completed 6/95

EP/CF-2	Develop guidance for well closures. Finalize Hazardous Waste Management Plans. Implement Hazardous Waste Management Plans. Develop Pesticide Management Program. Develop Underground Storage Tank Program. Develop Underground Injection Control Program. Develop a comprehensive SPCC Program.	Completed 6/95 Partially complete In progress Completed 10/95 In progress In progress Drafted
EP/CF-3	Develop guidance to ensure remedial responses comply with regulatory requirements. Incorporate remedial action response training into Training Program.	March 1994 Ongoing [1]
EP/BMPF-1	Develop procedure to ensure mitigation action plans are followed.	In progress
IC/BMPF-1	Develop "lessons learned" program.	In progress
SR/BMPF-2	Modify IDP and DTIS systems.	In progress
SR/BMPF-3	Develop Environmental Training Program. Identify personnel needed environmental training. Determine training needs. Coordinate training needs with other functional areas. Develop generic SOW for training. Incorporate environmental training into IDP and DTIS systems. Develop record keeping procedures. Procure training.	Partially complete Ongoing [1] Ongoing [1] Ongoing [1] In progress Not done Ongoing [1] Ongoing [1]
PE/CF-1	Incorporate self-assessment missing elements. Incorporate self-assessment into training.	In progress In progress
PE/CF-2	Rewrite WAPA 5482.1 (replaced by WAPA 5482.2A) Supplement audit/appraisal plans, as needed. Incorporate into training program. Implement all phases of audit and appraisal program.	March 1994 Drafted Not done Not done

PE/CF-3	Establish program to collect data to track and trend. Establish program to track and trend. Provide training in tracking and trending.	Partially complete Partially complete Not done
PE-BMPF-1	Provide environmental training to maintenance personnel.	Ongoing [1]
RM/BMPF-1	Review and define existing risk management. Develop procedures to ensure identification of regulatory issues pertinent to risk management.	Completed Completed 10/95

[1]Conducted/implemented by Regional Offices

Several separate hazardous/toxic material spill incidents were reported. These spills were cleaned up as required by TSCA, RCRA, or the CWA, and the spills resulted in insignificant environmental damage. The locations and materials spilled are listed below:

TABLE 1

LIST OF HAZARDOUS MATERIAL SPILLS
DURING CALENDAR YEAR 1995

FACILITY	STATE	SPILLED SUBSTANCE
Summit Substation	SD	20 gallons of non-PCB Dielectric Fluid
Edgely Substation	SD	10 gallons non-PCB dielectric fluid
Flandreau Substation	SD	20 gallons non-PCB dielectric fluid
Sterling Substation	CO	10 gallons non-PCB dielectric fluid
Manzanita Lake Microwave Facility	CA	1000 gallons propane
Tracy Substation	CA	25 gallons diesel

3.3 SUMMARY OF PERMITS

Western is required to obtain permits for underground storage tanks, PCB transportation and storage, hazardous waste storage, gasoline dispensing and underground injection wells.

TABLE 2
LIST OF ENVIRONMENTAL PERMITS
OBTAINED OR ONGOING DURING CALENDAR YEAR 1995

NAME	ISSUING AGENCY	STATUS	EXPIRATION DATE
404 Permit			
Nationwide	U.S. Army Corps	Ongoing	None
Migratory Bird Treaty Act			
Take Golden eagle nest in Arizona	U.S. Fish & Wildlife Service	Ongoing	12/31/96
Hazardous Waste			
Hauler Registration	State of CA	Renewed	10/31/95
Variance Application	State of CA	Obtained	10/31/95
Permit to Operate			
Underground Storage Tanks	Shasta County	Ongoing	Annually
	Sacramento County	Ongoing	Annually
Hazardous Materials Permit			
Hazardous Materials Business Plans	Shasta County	Ongoing	Annually
	Sacramento County	Ongoing	Annually
	Tehama County	Ongoing	Annually
	Alameda County		
	Kern County		
	Calavaras County		
	San Joaquin		
	Santa Clara County		
	Colusa County		
	Merced County		
	Contra Costa County		
Water Quality			
NPDES Permits			
Jamestown Substation	EPA Region VIII		

Stormwater Pollution Prevention Permit for Construction Project	State of Wyoming	Ongoing	Upon project completion
RCRA Part B			
Permit for Hinton Hazardous Waste Storage Facility	U.S. EPA	Closed	N/A
Gasoline Dispensing			
Facility Permit (CA)	Air Pollution Control District	Ongoing	9/95

4.0 ENVIRONMENTAL PROGRAM INFORMATION

4.1 ENVIRONMENTAL PROTECTION PROGRAMS

4.1.1 Environmental Protection Implementation Plan

In accordance with DOE Order 5400.1, Western developed an Environmental Protection Implementation Plan (EPIP) for Headquarters and each of the five Area Offices. The plans establish a written program that defines Western's environmental compliance, protection, and pollution prevention goals and objectives. The plans also delineate the responsibilities and authorities of the Heads of Field Organizations. Each Area Office is responsible for overseeing development of the program and ensuring its implementation. Western's Division of Environment is responsible for overseeing development and implementation of the Environmental Protection Implementation Plan for Western's Headquarters Office. However, in 1995, as Western began its transformation process, the Plans were not updated. As a result of moving from five Area Offices to four Regional Offices and de-centralizing many of the functions previously performed in Western's Headquarters Division of Environment a decision was made to put off updating the EPIPs until roles and responsibilities could be ascertained. In the meantime, last years EPIPs are still valid and where questions arise, Western"s environmental orders still stand.

4.1.2 Environmental Auditing Program

Western established an environmental auditing program in 1980. The major purposes of the auditing program are as follows:

- discover noncompliance with applicable local, state, and Federal regulations;
- reduce environmental risks;
- allow for communication with facility personnel;
- improve overall environmental performance;
- provide assistance and discuss compliance alternatives for problem areas;
- accelerate development of good environmental management practices;
- provide for worker safety when working with hazardous materials; and
- provide management with a tool for evaluating the priority of compliance issues.

The Western environmental auditing program includes auditing of Western facilities. The purpose of these audits is to advise facility and Area management of the applicability of current regulations regarding their particular operations. The audits are also conducted to review records, point out areas of non-compliance, and identify practices that are at variance with industry environmental standards. The audit results are used to provide compliance assistance to the facilities.

In 1995, 67 facilities were audited by Western Environment staff. These internal functional appraisals were undertaken in accordance with DOE Order 5482.1B and included substations, maintenance facilities, and storage yards. Audit reports include recommended actions the facility may adopt to improve compliance with the applicable regulations. The audited facilities are required by DOE Order 5482.1B and Western Order 5482.1 to formally respond to the audit within 30 days after receiving the report, and to correct the identified problems.

Western's environmental staff also conducted numerous external audits of its contractors and vendors. The purpose of these audits was to verify the vendor/contractor compliance with federal, state and local environmental laws and regulations. The

date of audit, the type of facility and its location are reported below.

DATE	FIRM AUDITED	TYPE OF FIRM	TYPE OF AUDIT
Mar. 28, 1995	Triad Transport, Inc., 1630 Diesel Ave., P.O. Box 818 McAlister, OK 74501	Hazardous Materials Transportation	Subcontractor Environmental Compliance
Mar. 30, 1995	S.D. Myers, Inc. 4425 Santa Fe Dr. Kingman, AZ 86401	Destruction/ Recycling of PCB Material	Subcontractor Environmental Compliance
May 3, 1995	Laidlaw Waste Systems (Colorado) Inc., 1441 Weld County, Rd. Six, P.O. Box 320 Erie, CO 80516	Regional Landfill (South)	Environmental Compliance Inspection
May 8, 1995	Safety Kleen 3704 Saratoga Ave. Bismarck, ND 58501	Used Parts Cleaner, Solvent Recycler	Environmental Compliance Inspection
May 9, 1995	Otter Tail Power Co., Big Stone Plant, approx. 2 miles WNW of Big Stone, SD, P.O. Box 218, Big Stone City, SD 57216	Utilization of MODEF for Utility Boiler Fuel	Environmental Compliance Inspection
May 10, 1995	Exide Corporation 3705 Saratoga Ave. Bismarck, ND 58501	Storage of Pb-Acid Batteries for Reclamation	Environmental Compliance Inspection
May 11, 1995	Waste Recovery Services, Inc. 995 Hwy. 10 E. P.O. Box 910 Belfield, ND 58622	Storage of Hazardous Waste	Environmental Compliance Inspection

May 25, 1995	Rocky Mountain Battery Service 7975 W. 44th. Ave. Wheat Ridge, CO 80033	Storage of Pb-Acid Batteries for Reclamation	Environmental Compliance Inspection
July 11, 1995	Envirosafe Services of Idaho, Inc. 10.5 Miles NW of Hwy. 78, Missile Base Road, P.O. Box 400, Grand View, ID 83624	Hazardous Waste Landfill	Subcontractor Environmental Compliance
July 14, 1995	S.D.Myers, Inc. 180 S. Avenue Tallmadge, OH 44278	Destruction/ Recycling of PCB Material	Subcontractor Environmental Compliance
Aug. 31, 1995	Intermountain Batteries 1910 N. Main P.O. Box 1728 Durango, CO 81320	Storage of Pb-Acid Batteries for Reclamation	Environmental Compliance Inspection
Oct. 5, 1995	T & R Service US Hwy. 43 W. P.O. Box 197 Colman, SD 57017	Commercial Storage of PCB Material/Waste Reduction and Recycling	Environmental Compliance Inspection
Oct. 1995	ThermoFluids Thermo Remediation Phoenix, AZ	Oil recycling	Environmental Compliance Inspection

4.1.3 Long Range Environmental Plan

In 1988, the Department of Energy committed to the preparation of a long range plan to address the Department's environmental, safety, and health concerns. Western began the preparation of its long range environmental plan in 1988 in accordance with DOE Order 5400.1. An updated draft of the plan was prepared in November of

1990 and revised again in 1994. The primary purpose of the plan is to present environmental protection requirements, goals, and necessary resources so that long range budgets and other commitments can be made. The information presented in the plan will also aid the Area offices and facilities in understanding, and complying with the Federal environmental protection regulations. Some specific issues addressed in the plan are provided below.

- assessing environmental compliance
- implementing programs and achieving compliance
- emergency planning
- environmental training equipment
- record keeping and waste tracking
- enforcement actions
- air quality control
- water quality control
- managing and disposal of hazardous wastes
- transporting of hazardous wastes
- managing and disposal of pesticides
- managing solid wastes
- managing polychlorinated biphenyls
- managing underground storage tanks
- compliance with community right-to-know
- assessment and management of past disposal practices

4.1.4 Environmental Protection Compliance Information

In 1995, Western continued to provide field staff with information on environmental protection compliance. Information and summaries of specific regulations, statutes, and compliance issues are covered in non-legal terms, to enhance understanding and readability. Advisories developed during 1995, as shown below, supplement the more formal notices (sent in the form of handbooks and memoranda) that are used to inform Area and District Managers and their environmental staff of regulatory requirements.

- Final Quality Assurance Program Plan
- WAPA 5400.1A and 2A which assign responsibilities and delegate authority for ensuring environmental compliance.
- NPDES Stormwater Discharge Rules Updates
- Underground Storage Tank Requirements
- Emergency Planning and Community Right-to-Know Guidance
- Revised Preliminary Assessment/Site Investigation Guidance Document

- Groundwater Protection Guidance
- Class V Underground Injection Well Information and Guidance
- Oil Pollution Act of 1990 Update and Guidance
- DOE Guidance Sheets for RCRA/CERCLA
- Land Disposal Restrictions Regulation Changes
- Clean Air Act Updates and Guidance
- Risk Management Guidance
- EPA SAFER and SACM Guidance
- Stormwater Management Guidance

4.1.5 Waste Minimization

In complying with Executive Order 12856, DOE Order 5400.1, WAPA Order 5400.2A, and Executive Orders 12780, 12873, and 12843, Western developed a Waste Minimization/Pollution Prevention Awareness Plan (Plan). The purpose of this Plan is to provide guidance for development and implementation of a facility-wide, multimedia pollution prevention program within Western. Western's primary goal is to eliminate or reduce the generation of waste and associated adverse environmental impacts throughout Western, with primary emphasis on source reduction. This goal includes support of DOE's commitment to the requirements of Executive Order 12856, which establishes a national goal of reducing releases of CERCLA Section 313 toxic chemicals by 50 percent by December 31, 1999.

The specific activities necessary to meet the Plan goals include (1) evaluation of Western's facilities and operations for waste minimization/pollution prevention opportunities (pollution prevention opportunity assessments); (2) incorporation of pollution prevention considerations into the acquisition process (including affirmative procurement of recycled materials); (3) a pollution prevention ethic and development of pollution prevention awareness in the workplace; and (4) annual reporting to DOE on status of Western's Waste Minimization/Pollution Prevention Program, and annual evaluation of progress toward the Plan goals.

Pollution prevention is incorporated into existing training so that pollution prevention goals, projects, and ideas are discussed and emphasized as part of the training curriculum or meeting agendas.

Western employees who generate or handle waste, or recycle and reuse materials, are required to report this information to their respective Waste Minimization Assessment Team members. An annual

report on waste generation and waste minimization progress will be prepared by the CSO and submitted to DOE each year.

Minimization of hazardous waste production is continuing at Western. First, hazardous waste minimization is accomplished by the reduced use of hazardous materials, that is, smaller amounts of hazardous materials, such as solvents, are being used. Second, materials that are non-toxic or that have reduced toxicity are being substituted, whenever possible, for more hazardous materials. Western is specifying a product that is not listed as hazardous be substituted, where possible, for treating wood transmission line structures. Third, employees are being informed as to the desirability of using alternate, less regulated solvents, degreasers, corrosion inhibitors, and other substances.

4.1.6 Environmental Risk Assessment and Management

Environmental risk Management tool have been designed and developed for the following uses:

- provide a formal systematic review of operations/activities to identify sources of environmental risk;
- Provide a formal risk management system (including written procedures and assigned personnel to set priorities, establish risk acceptability assessments, track performance, handle crises, and manage risk;
- provide an opportunity to review activities to assess relative impacts;
- assure that all new projects, programs or activities that may impact the agency can be reviewed to identify and address environmental risks as early as possible; and
- establish a formal project/program review and approval process which includes environmental considerations.

Two assessment methods were developed for use by Western: 1) the qualitative Issue Characterization (QuIC); and 2) the Semi-Quantitative Evaluation (SEQUEL). The QuIC approach is used to gather and structure the basic information needed to make decision about environmental issues. The SEQUEL approach uses this information to evaluate and rank environmental risk issues and

also to evaluate Western's ability to manage that risk. SEQUEL evaluates the environmental risk by assessing an issue's potential human and environmental impacts, regulatory impacts, business impacts and public perception impacts. The ability to manage risk is based on an organizations's environmental policies, human and financial resources, and its performance in the area of policy implementation. By comparing the risk score of an environmental issue with the score gaging Western's ability to manage risk, Western is able to identify imbalances and work toward correcting deficiencies in our environmental management system.

The environmental risk assessment and management tools were computerized to increase the ease of use of the process, simplify documentation of data, accelerate transfer of data between risk assessment team members, and produce standardized output products to report and document results. If fully implemented, these tools should help improve Western's ability to manage environmental risks and effectively prioritize environmental management activities through effective internal and external risk communication thus reducing costs.

4.2 STATE AND LOCAL ENVIRONMENTAL REQUIREMENTS

Western operates in 15 western and mid-western states. State, county, and local governments apply environmental and siting controls and restrictions to Federal agencies as well as to private industry. Executive Order 12088 requires Federal agencies to comply and coordinate with EPA and state and local environmental regulators in many situations.

Most of the states in Western's service area regulate the generation, transportation, treatment, storage, and disposal of hazardous and toxic materials. Community right-to-know legislation and hazardous waste clean-up laws, enacted by numerous states, are increasing control over or tracking hazardous and toxic materials. Congress has included provisions in most of its Federal environmental acts for states to become authorized to implement and manage the requirements of Federal acts. Examples of this include RCRA authorization, community right-to-know, pesticide application, and underground storage tank regulations.

Western cooperates with state and local environmental regulators and works toward compliance with applicable laws, statutes, regulations, and ordinances. Environmental audits of Western facilities address applicable state requirements in addition to those imposed by the Federal government. Additionally, Western's field environmental staff

have developed annual chemical inventory programs to provide CERCLA Section 311 and 312 reports to local emergency response entities.

4.3 STATUS OF ENVIRONMENTAL PLANNING ACTIVITIES AND RESEARCH

Navajo Transmission Project EIS:

EIS Determination - April 12, 1993.

Implementation Plan - Has been on hold as the schedule information has changed so frequently. We anticipate sending it to DOE for review and comment in February 1996.

Draft EIS - Anticipate sending to DOE in March 1996.

Emery-Grand Junction Transmission Line EIS:

Participants have dropped out of this project and it is currently on hold. We anticipate that it will eventually come back in a different form and suggest that it be taken off the schedule at this time.

Adelanto-Lugo Transmission Line Project EIS:

EIS Determination - October 26, 1992.

EIS Implementation Plan - We anticipate that it will be sent to DOE for review and comment in February or March 1996.

Scoping Meetings - The details will be forwarded to DOE as soon as the information is received from the Regional Office.

Weld-Windsor Transmission Line EA:

EA Determination - December 20, 1991.

The draft EA is currently being reviewed in our Golden, Colorado, office.

Estes-Mary's Lake Transmission Line Upgrade and Substation Additions EA:

EA Determination - March 31, 1995.

The preliminary draft EA received an internal Western review and is currently being revised.

Table 3 lists the EAs and EISs completed in calendar year 1995. One EA was completed in calendar year 1995.

Western's list of standard mitigation measures (Appendix C) accompanies all transmission line construction contracts. This list has been developed over the years to ensure compliance with the NEPA, the Council on Environmental Quality (CEQ) guidelines, the NHPA, the Endangered Species Act and the Fish and Wildlife Coordination Act, among others. These measures are based on Western's experience with impacts associated with transmission line construction, operation, and maintenance.

TABLE 3

ENVIRONMENTAL ASSESSMENTS AND
ENVIRONMENTAL IMPACT STATEMENTS
FOR CALENDAR YEAR 1995

PROJECT NAME	CLEARANCE DATE
Salt Lake City Integrated Projects Power Marketing EIS	06/95
Flatiron-Erie Transmission Line EIS	08/95
Energy Planning and Management Program (EPAMP) EIS	03/95
Central Valley Project 2004 Power Marketing EIS	11/96
Adelanto-Lugo Transmission Line Project EIS	06/96
Navajo Transmission Project EIS	10/96
Emery-Grand Junction Transmission Line Project EIS	no date
Weld-Windsor Transmission Line EA	no date
Gering-Stegal Transmission Line Project EA	06/95

In 1995, Western continued its policy of initiating contacts with resource management and permitting agencies in the early stages of

projects. This provides an effective and efficient means of assuring the consideration of sensitive environmental parameters.

Western construction activities operated under one Mitigation Action Plan during CY95. Accomplishments under the Plan for the Mead-Phoenix Transmission Line Project are reported in Attachment D. Other mitigation activities undertaken during CY95 are listed below.

- Surveys were undertaken for the boreal toad in Colorado; black-footed ferrets in Wyoming; birds of prey in California, Wyoming, Colorado, Nebraska, New Mexico, Utah, Nevada, and Arizona; and various endangered or threatened plants in Arizona and New Mexico.

- Aviation marker balls were installed at river crossings in South Dakota, Arizona, Nevada, and California.

- Monitored reconstructed vernal pools (wetlands) in California to determine success rate. Requirements were to replace 2.92 acres. Western is currently showing 3.27 acres as successful habitat.

Western had approximately 37 environmental planning projects either started or underway during CY95. Most of these projects, listed in Table 4, are CXs, EISs or EAs for high voltage transmission lines, power marketing rate adjustments, and/or communications systems.

TABLE 4

ENVIRONMENTAL PLANNING PROJECTS ONGOING
OR COMPLETED IN CALENDAR YEAR 1995

PLANNING PROJECTS	CLEARANCE
CATEGORICAL EXCLUSIONS	
Los Vaqueros Tap	2/95
Stampede Rate Adjustment	6/95
Tracy-Ignacio 69-kV Rehabilitation	1/95
Elverta Maintenance Yard Improvements	2/95
Kayenta Substation and Mid-line Staged Fault Tests	03/95
Glen Canyon-Shiprock Transposition Project	04/95
Rifle-San Juan Access Control Gates	07/95
New Access Road near Curecanti Substation	09/95
Skito Tap Substation Easement Out grant	09/95
City of Tucson Silvercroft Wash Pole Replacement	02/95
Fiddyment Substation CX	04/95
Arizona DOT Pole Replacement Project	02/95
ED-2 Substations Upgrade Project	02/95
Tangerine Pole Replacement Project	04/95
Parker-Davis Rate Adjustment	08/95
Boulder Canyon Rate Adjustment	09/95
Rogers Substation Tie to City of Mesa Water	10/95
Phoenix Substation Subsurface Investigation	10/95
Amargosa Substation Subsurface Investigation	10/95
Parker and Davis Dam Subsurface Investigation	10/95
Lovell Substation Stage 08 CX	01/95
Granby Substation Project	03/95
Sidney Substation Project	03/95
Western-wide Routine Maintenance CX	01/95
Williston-Garrison Erosion Control Project	08/95
Midland Communication Site	08/95
Wall Communication Site	08/95

4.3.1 Research

Western participated in several programs dealing with environmental planning. Among these is the Colorado River Endangered Fish Species Recovery Program. For this program Western provides program review of the ecological studies of such endangered fish as the Colorado River Squawfish and the Humpback Chub. Western also has personnel serving on the Joint High Voltage Direct Current Agricultural Study Oversight Committee, Western Systems Coordinating Council Environmental Committee, the Mid-Continent Area Power Pool Environmental Committee, American Public Power Association Environmental Committee, and the Electric Power Research Institute's Environmental Research Oversight Committees.

5.0ENVIRONMENTAL MONITORING INFORMATION

5.1 GROUNDWATER MONITORING

Two Western facilities were required by state and/or federal regulations to conduct groundwater monitoring (or sampling); one facility installed groundwater monitoring wells and is awaiting State direction on monitoring; and another facility concluded their groundwater monitoring requirements. Groundwater quality monitoring is to determine whether degradation of groundwater below the sites is occurring as a result of Western's activities.

5.1.1 Miles City Converter Station

Coolant water from the Miles City Converter Station is no longer discharged to an on-site evaporation pond, but rather is now pre-treated to reduce the pH and is then discharged to the Miles City Municipal Sewer System. Since the pond was no longer in use, monitoring of area groundwater quality for potential impacts from evaporation pond seepage was discontinued. The groundwater monitoring wells will be closed according to Montana State regulations, and Western developed a closure plan for the evaporation pond, with approval from the State. Results from soil sample analyses of pond sediments indicated high sediment pH as the only concern. The closure plan proposes to regrade the evaporation pond to area grade, and it is anticipated that regrading will mix pond sediments with area soils, thereby reducing soil pH in the former evaporation pond area to acceptable levels.

5.1.2 Phoenix Operations and Maintenance Facility

Two groundwater monitoring wells were installed at the Desert Southwest's Phoenix Operations and Maintenance Facility to monitor for potential impacts to area groundwater quality due to contaminants leaked from one of the site's

5.1.2 Phoenix Operations and Maintenance Facility

Two groundwater monitoring wells were installed at the Desert Southwest's Phoenix Operations and Maintenance Facility to monitor for potential impacts to area groundwater quality due to contaminants leaked from one of the site's underground storage tanks. Western is awaiting further instruction from the State of Arizona before commencing groundwater monitoring.

5.1.3 Sishc (Gering) Foundry Site

Four ground water monitoring wells, one upgradient and three downgradient, were installed at the former Sishc Foundry in Gering, Nebraska, the proposed site for the Gering Maintenance Facility. The wells were installed in association with a non time-critical removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at the Sishc Foundry site. Analytical results from two independent rounds of ground water sampling at the four wells were to provide specific information for assessing actual or the potential for contamination of area ground that may be attributable to former foundry operations.

5.1.4 Fort Morgan

5.2 HAZARDOUS MATERIAL SPILL INFORMATION

Western had no significant hazardous materials spills in 1995.

6.0 GROUNDWATER PROTECTION PROGRAM

Western is developing an integrated, risk-based groundwater protection management program for protection and management of both groundwater quality and quantity. Western's program is being developed in accordance with DOE draft groundwater protection guidelines. A groundwater monitoring plan, as required by DOE Order 5400.1, is part of the program. Groundwater protection management requirements had previously been incorporated into other programs which inherently involve groundwater protection; such as for underground storage tanks, underground injection control, and solid waste disposal. Compliance with federal, state, and local regulations is an integral part of all Western programs.

7.0 QUALITY ASSURANCE

The current quality assurance policy for Western has been established in Western Order 5700.1. It is Western's policy that, in the areas of environmental compliance, safety, and health, quality requirements shall be established consistent with DOE Orders. The Assistant to the Administrator for Conservation, Environment, and Safety is responsible for the quality of compliance with relevant environmental laws and regulations. The Area Managers are responsible for the quality of activities in their own geographical areas. Due to the nature of Western's operations, an independent data verification program has not been established. Independent laboratories are used for analyzing samples taken by Western or its contractors, and the laboratories used are certified when required by federal, state or local regulations. Western uses split sampling and similar techniques to test the accuracy of data from laboratories. An independent data verification program will be established for a specific project if required by the regulatory agency involved.

A Quality Assurance Program Plan (QAPP) has been developed to outline the policies, objectives, concepts, systems, and procedures for Western as required by DOE Orders 5400.1 and 5700.6C. The QAPP draft was peer reviewed and preliminary implementation of the plan began in late 1992. The implementation of a QAPP will provide credibility for environmental projects and ensures the generation of legally defensible data.

REFERENCES

Clean Air Act

Clean Water Act

Code of Federal Regulations

Comprehensive Environmental Response Compensation and Liability Act

Department of Energy Organization Act of 1977 (P.L. 95-91)

DOE Order 231.1

DOE Order 5400.1

DOE Order 5482.1B

DOE Order 5484.1

Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

Emergency Planning Community Right-to-know Act

Executive Order 12088

Executive Order 12843

Executive Order 12856

Executive Order 12873

Federal Facilities Compliance Act

Federal Insecticide, Fungicide, and Rodenticide Act

Federal Water Pollution Control Act

Fish and Wildlife Coordination Act (16 U.S.C. 661-666c)

Hazardous and Solid Waste Amendments of 1984

National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347)

National Historic Preservation Act of 1966, as Amended

Pollution Prevention Act

Resource Conservation and Recovery Act

Safe Drinking Water Act

Superfund Amendments and Reauthorization Act of 1986

Toxic Substances Control Act

Western Area Power Administration Order 5400.1A

Western Area Power Administration Order 5400.2A

APPENDIX A

Summary of Sishc Foundry

Groundwater Monitoring Results

TABLE A-1

SUMMARY OF GROUNDWATER AND ASSOCIATED QA/QC SAMPLES COLLECTED DURING THE SISHC FOUNDRY GROUNDWATER INVESTIGATION

Western Area Power Administration
Loveland Area Office - Sishc Foundry Site

Monitoring Well Number	Screen Depth (Ft-BGS)	Sample Identification Number	Sample Type	QA/QC Sample Type	Sample Matrix	Date Sampled	Time Sampled	Analytical Parameters	Field Parameters
1st Round									
GER- 01	29.0 to 54.0	GER - 01 - 2001	A	MS	Water	2-May-95	1200	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
		GER - 01 - 0191	A	PE	Water	2-May-95	1400	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	
GER- 02	28.0 to 53.0	GER - 02 - 2001	A		Water	1-May-95	1000	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
GER- 03	27.5 to 52.5	GER - 03 - 2001	A		Water	1-May-95	1100	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
		GER - 03 - 0161	A	FD	Water	1-May-95	1200	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
GER- 04	28.5 to 53.5	GER - 04 - 2001	A		Water	1-May-95	1450	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
		GER - 04 - 0171	A	RB	Water	1-May-95	1550	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
2nd Round									
GER- 01	29.0 to 54.0	GER - 01 - 2002	A		Water	9-Aug-95	0910	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
GER- 02	28.0 to 53.0	GER - 02 - 2002	A		Water	9-Aug-95	0745	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
		GER - 02 - 0162	A	FD	Water	9-Aug-95	0805	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
GER- 03	27.5 to 52.5	GER - 03 - 2002	A		Water	9-Aug-95	1030	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
		GER - 03 - 0172	A	RB	Water	9-Aug-95	1100	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
GER- 04	28.5 to 53.5	GER - 04 - 2002	A	MS	Water	9-Aug-95	0600	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	pH, SC, T, Tur, DO
		GER - 04 - 0192	A	PE	Water	9-Aug-95	0700	TCL VOCs, TCL Semi-VOCs, TAL Metals, TRPH, WQ	

A	Groundwater Analytical
FD	Field Duplicate
RB	Rinsate Blank
PE	Performance Evaluation
MS	Matrix Spike/Matrix Spike Duplicate
Ft-BGS	Feet Below Ground Surface
TCL	Target Compound List
VOCs	Volatile Organic Compounds (CLP)
Semi-VOCs	Semi-volatile Organic Compounds (CLP)
TAL	Target Analyte List
Metals	Metals (CLP)
TRPH	Total Recoverable Petroleum Hydrocarbons (418.1)
WQ	Water Quality Parameters:
	Chloride, Sulfate, Nitrate (300.1); Alkalinity (310.1)
	Total Dissolved Solids (160.1)
	Total Suspended Solids (160.2)
SC	Specific Conductivity
T	Temperature
Tur	Turbidity
DO	Dissolved Oxygen

TABLE A-2

SUMMARY OF VOLATILE ORGANIC ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED DURING THE FIRST (MAY 1995) AND SECOND (AUGUST 1995) SAMPLING ROUNDS

Western Area Power Administration
Loveland Area Office - Sishc Foundry Site

Monitoring Well Number		GER-01				GER-02				GER-03				GER-04				Site Specific Maximum Background Level *	Regulatory Limits	
Sample Number		GER-01-2001		GER-01-2002		GER-02-2001		GER-02-2002		GER-03-2001		GER-03-2002		GER-04-2001		GER-04-2002			EPA SDWA MCL	NDEQ GW MCL
Sample Date		2-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95				
Chemical	Units	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL			
Chloromethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
Bromomethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
Vinyl Chloride	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	2.0	2.0
Chloroethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	2.0	5.0	
Methylene Chloride	ug/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	5.0		
Acetone	ug/L		R		R	5.5	J		R	2.1	J		R	2.5	J		R	5.0		
Carbon Disulfide	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	7.0	7.0
1,1-Dichloroethene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
1,1-Dichloroethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	70	70
cis-1,2-Dichloroethene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	100	100
trans-1,2-Dichloroethene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	100	
Chloroform	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	5.0	5.0
1,2-Dichloroethane	ug/L	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0		
2-Butanone	ug/L		R		R	10.0	J		R		R		R		R		R	5.0		
Bromochloromethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
1,1,1-Trichloroethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	200	200
Carbon Tetrachloride	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	5.0	5.0
Bromodichloromethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
1,2-Dichloropropane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	5.0	5.0
cis-1,3-Dichloropropene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
Trichloroethene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	5.0	5.0
Dibromochloromethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	100	
1,1,2-Trichloroethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
Benzene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	5.0	5.0
trans-1,3-Dichloropropene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
Bromoform	ug/L	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	100**	
4-Methyl-2-pentanone	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2-Hexanone	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Tetrachloroethene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	5.0	5.0
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
1,2-Dibromoethane	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
Toluene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	1000	1000
Chlorobenzene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	100	100
Ethylbenzene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	700	700

TABLE A-2

(Concluded)

Monitoring Well Number		GER-01				GER-02				GER-03				GER-04				Site Specific Maximum Background Level [a]	Regulatory Limits	
Sample Number		GER-01-2001		GER-01-2002		GER-02-2001		GER-02-2002		GER-03-2001		GER-03-2002		GER-04-2001		GER-04-2002			EPA SDWA MCL	NDEQ GW MCL
Sample Date		2-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95				
Chemical	Units	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL			
Styrene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0		
Xylenes (Total)	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	10000	10000
1,3-Dichlorobenzene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	600	
1,4-Dichlorobenzene	ug/L	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	75	75
1,2-Dichlorobenzene	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	600	600
1,2-Dibromo-3-Chloropropene	ug/L		R		R		R		R		R		R		R		R	1.0		

[a] Site specific maximum background levels were the higher concentration from either of the two sampling rounds for detected analytes (values on right side of column), or the higher detection limit from either of the two sampling rounds for non-detected analytes (values on left side of column).

[b] EPA secondary maximum contaminant level

EPA	Environmental Protection Agency
SDWA	Safe Drinking Water Act
MCL	Maximum Contaminant Level
NDEQ	Nebraska Department of Environmental Quality
GW	Groundwater
QL	Qualifier
CRQL	Contract Required Quantitation Limit
ug/L	Micrograms per liter
U	Not detected
UJ	Estimated as non-detect at the CRQL
J	Estimated value
R	Rejected

TABLE A-3

SUMMARY OF SEMIVOLATILE ORGANIC ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED DURING THE FIRST (MAY 1995) AND SECOND (AUGUST 1995) SAMPLING ROUNDS

Western Area Power Administration
Loveland Area Office - Sishe Foundry Site

Monitoring Well Number		GER-01				GER-02				GER-03				GER-04				Site Specific Maximum Background Level [a]	Regulatory Limits	
Sample Number		GER-01-2001		GER-01-2002		GER-02-2001		GER-02-2002		GER-03-2001		GER-03-2002		GER-04-2001		GER-04-2002			EPA SDWA MCL	NDEQ GW MCL
Sample Date		2-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95				
Chemical	Units	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL			
Phenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
bis(2-Chloroethyl)ether	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2-Chlorophenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	UJ	5.0		
Benzyl alcohol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2-Methylphenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2,2'-Oxybis(1-Chloropropane)	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
4-Methylphenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
N-Nitroso-di-n-propylamine	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Hexachloroethane	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Nitrobenzene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Isophorone	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2-Nitrophenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2,4-Dimethylphenol	ug/L	5.0	UJ	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Benzoic acid	ug/L	20.0	U	20.0	U	21.0	UJ	20.0	U	20.0	UJ	20.0	U	20.0	UJ	20.0	U	20.0		
bis(2-Chloroethoxy)methane	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2,4-Dichlorophenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
1,2,4-Trichlorobenzene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	70	
Naphthalene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
4-Chloroaniline	ug/L		R	5.0	UJ		R	5.0	UJ		R	5.0	UJ		R	5.0	UJ	5.0		
Hexachlorobutadiene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
4-Chloro-3-methylphenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2-Methylnaphthalene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Hexachlorocyclopentadiene	ug/L	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	50	
2,4,6-Trichlorophenol	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2,4,5-Trichlorophenol	ug/L	20.0	U	20.0	U	21.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	50	
2-Chloronaphthalene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2-Nitroaniline	ug/L	20.0	U	20.0	U	21.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0		
Dimethylphthalate	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Acenaphthylene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2,6-Dinitrotoluene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
3-Nitroaniline	ug/L	20.0	U	20.0	U	21.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0		
Acenaphthene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2,4-Dinitrophenol	ug/L	20.0	U	20.0	U	21.0	UJ	20.0	UJ	20.0	U	20.0	UJ	20.0	U	20.0	U	20.0		
4-Nitrophenol	ug/L	20.0	U	20.0	U	21.0	U	20.0	UJ	20.0	U	20.0	UJ	20.0	U	20.0	U	20.0		

TABLE A-3

(Concluded)

Monitoring Well Number		GER-01				GER-02				GER-03				GER-04				Site Specific	Regulatory Limits	
Sample Number		GER-01-2001		GER-01-2002		GER-02-2001		GER-02-2002		GER-03-2001		GER-03-2002		GER-04-2001		GER-04-2002		Maximum	EPA	NDEQ
Sample Date		2-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		Background	SDWA	GW
Chemical	Units	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Level *	MCL	MCL
Dibenzofuran	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
2,4-Dinitrotoluene	ug/L	5.0	U	5.0	U	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	U	5.0		
Diethylphthalate	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
4-Chlorophenyl-phenylether	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Fluorene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
4-Nitroaniline	ug/L	20.0	U	20.0	U	21.0	U	20.0	UJ	20.0	U	20.0	UJ	20.0	U	20.0	U	20.0		
4,6-Dinitro-2-methylphenol	ug/L	20.0	U	20.0	U	21.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0		
N-Nitrosodiphenylamine	ug/L	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0		
4-Bromophenyl-phenylether	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Hexachlorobenzene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	1.0	
Pentachlorophenol	ug/L	20.0	U	20.0	U	21.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	1.0	
Phenanthrene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Anthracene	ug/L	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0		
Carbazole	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Di-n-butylphthalate	ug/L	5.0	U	5.0	U	5.0	U	7.0	U	5.0	U	8.0	U	5.0	U	7.0	U	5.0		
Fluoranthene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Pyrene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Butylbenzylphthalate	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
3,3'-Dichlorobenzidine	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Benzo(a)anthracene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Chrysene	ug/L	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0		
bis(2-Ethylhexyl)phthalate	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	1.0	J	5.0	U	5.0		
Di-n-octylphthalate	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Benzo(b)fluoranthene	ug/L	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0		
Benzo(k)fluoranthene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Benzo(a)pyrene	ug/L		R	5.0	UJ		R	5.0	UJ		R	5.0	UJ		R	5.0	UJ	5.0	0.2	
Indeno(1,2,3-cd)pyrene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Dibenzo(a,h)anthracene	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0		
Benzo(g,h,i)perylene	ug/L	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0	UJ	5.0	U	5.0		

* Site specific maximum background levels were the higher concentration from either of the two sampling rounds for detected analytes (values on right side of column); or the higher detection limit from either of the two sampling rounds for non-detected analytes (values on left side of column).

EPA	Environmental Protection Agency	CRQL	Contract Required Quantitation Limit
SDWA	Safe Drinking Water Act	ug/L	Micrograms per liter
MCL	Maximum Contaminant Level	U	Not detected
NDEQ	Nebraska Department of Environmental Quality	UJ	Estimated as non-detect at the CRQL
GW	Groundwater	J	Estimated value
QL	Qualifier	R	Rejected

TABLE A-4

SUMMARY OF TOTAL METAL ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED DURING THE FIRST (MAY 1995) AND SECOND (AUGUST 1995) SAMPLING ROUNDS

Western Area Power Administration
Loveland Area Office - Sisbe Foundry Site

Monitoring Well Number		GER-01				GER-02				GER-03				GER-04				Site Specific Maximum Background Level *	Regulatory Limits	
Sample Number		GER-01-2001		GER-01-2002		GER-02-2001		GER-02-2002		GER-03-2001		GER-03-2002		GER-04-2001		GER-04-2002			EPA SDWA MCL	NDEQ GW MCL
Sample Date		2-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95				
Chemical	Units*	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL			
Aluminum (Total)	ug/L	13300		636		78200		1120		12800		669		3450		1480		13300		
Antimony (Total)	ug/L	54.0	U	58.0	U	54.0	U	58.0	U	93.3		58.0	U	54.0	U	58.0	U	58.0	6.0	
Arsenic (Total)	ug/L	18.0		18.0		29.9		21.5		12.9		22.8		10.6		15.2		18.0	50	50
Barium (Total)	ug/L	370		81.4		884		77.0		265		66.7		122		75.9		370	2000	1000
Beryllium (Total)	ug/L	1.0	U	1.0	U	3.7		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	4.0	
Cadmium (Total)	ug/L	3.0	U	5.0	U	3.0	U	5.0	U	3.0	U	5.0	U	3.0	U	5.0	U	5.0	5.0	5.0
Calcium (Total)	ug/L	124000		65700		155000		108000		136000		122000		150000		155000		124000		
Chromium (Total)	ug/L	14.2		3.0	U	82.7		3.0	U	9.3		3.0	U	3.0	U	5.0		14.2	100	100
Cobalt (Total)	ug/L	6.0	UJ	6.0	U	21.0	J	6.0	U	6.0	UJ	6.0	U	6.0	UJ	6.0	U	6.0		
Copper (Total)	ug/L	25.7		4.5		63.1		3.7		17.3		3.2		8.4		32.2		25.7	1000**	1000
Iron (Total)	ug/L	13200		596		64900		910		10400		574		2690		1210		13200	300**	300
Lead (Total)	ug/L	10.6		2.0	U	98.2		2.0	U	5.9		2.0	U	2.2		2.0	U	10.6	50	50
Magnesium (Total)	ug/L	40800		27100		69800		44000		43000		44200		49200		58800		40800		
Manganese (Total)	ug/L	468		14.7		1240		39.4		359		192		296		63.9		458	50**	50
Mercury (Total)	ug/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	2.0	2.0
Nickel (Total)	ug/L	12.0	U	15.0	U	44.8		15.0	U	12.0	U	15.0	U	12.0	U	15.0	U	15.0	100	
Potassium (Total)	ug/L	24000		14700		44100		17100		23400		23000		22800		20300		24000		
Selenium (Total)	ug/L	11.3	J	7.7		15.6	J	6.1		11.9	J	7.5		18.6	J	19.0		11.3	50	50
Silver (Total)	ug/L	3.0	U	4.0	U	3.0	U	4.0	U	3.0	U	4.0	U	3.0	U	4.0	U	4.0	50	50
Sodium (Total)	ug/L	281000		207000		230000		216000		247000		240000		340000		277000		281000		
Thallium (Total)	ug/L	4.0	UJ	2.0	UJ	4.0	U	2.0	U	4.0	U	2.0	UJ	4.0	U	2.0	U	4.0	2.0	
Vanadium (Total)	ug/L	26.0		13.9		107		12.4		21.9		12.1		11.1	J	11.9		26.0		
Zinc (Total)	ug/L	80.4		19.8	UJ	277		14.6	UJ	53.0		10.9	UJ	39.8		67.1	J	80.4	5000**	5000

* Site specific maximum background levels were the higher concentration from either of the two sampling rounds for detected analytes (values on right side of column); or the higher detection limit from either of the two sampling rounds for non-detected analytes (values on left side of column).

** EPA secondary maximum contaminant level

78200 — Shading and bold indicates that these concentrations exceeded the site specific maximum background level by three times (if detected in GER-01) or the detection limit (if not detected in GER-0

1240 — Outlined and bold indicates that these concentrations exceeded the most stringent MCLs.

64900 — Black shading indicates that these concentrations exceeded both the site specific maximum background level and the most stringent MCLs.

EPA	Environmental Protection Agency	QL	Qualifier
SDWA	Safe Drinking Water Act	ug/L	Micrograms per liter
MCL	Maximum Contaminant Level	U	Not detected
NDEQ	Nebraska Department of Environmental Quality	UJ	Estimated as non-detect at the instrument detection limit
GW	Groundwater	J	Estimated value

TABLE A-5

SUMMARY OF DISSOLVED METAL ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED DURING THE FIRST (MAY 1995) AND SECOND (AUGUST 1995) SAMPLING ROUNDS

Western Area Power Administration
Loveland Area Office - Sishe Foundry Site

Monitoring Well Number		GER-01				GER-02				GER-03				GER-04				Site Specific	Regulatory Limits	
Sample Number		GER-01-2001		GER-01-2002		GER-02-2001		GER-02-2002		GER-03-2001		GER-03-2002		GER-04-2001		GER-04-2002		Maximum Background Level *	EPA SDWA MCL	NDEQ GW MCL
Sample Date		2-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95				
Chemical	Units	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL			
Aluminum (Dissolved)	ug/L	33.0	U	29.0	U	33.0	U	29.0	U	33.0	U	29.0	U	33.0	U	29.0	U	33.0		
Antimony (Dissolved)	ug/L	54.0	U	3.0	U	54.0	U	3.0	U	54.0	U	3.1		54.0	U	3.0	U	54.0	6.0	
Arsenic (Dissolved)	ug/L	13.0		26.7		28.8		23.2		9.9		31.4		9.6		16.8		26.7	50	50
Barium (Dissolved)	ug/L	38.3		63.7		74.6		59.3		106		51.6		78.8		51.0		63.7	2000	1000
Beryllium (Dissolved)	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	4.0	
Cadmium (Dissolved)	ug/L	3.0	U	5.0	U	3.0	U	5.0	U	3.0	U	5.0	U	3.0	U	5.0	U	5.0	5.0	5.0
Calcium (Dissolved)	ug/L	74400		60600		127000		102000		103000		110000		135000		146000		74400		
Chromium (Dissolved)	ug/L	3.0	U	3.0	UJ	3.0	U	3.0	UJ	3.0	U	3.0	UJ	3.0	U	3.0	UJ	3.0	100	100
Cobalt (Dissolved)	ug/L	6.0	UJ	6.0	U	6.0	U	6.0	U	6.0	U	6.0	U	6.0	U	6.0	U	6.0		
Copper (Dissolved)	ug/L	2.0	U	3.0	U	2.0	UJ	3.0	U	2.0	UJ	3.0	U	2.0	UJ	3.0	U	3.0	1000**	1000
Iron (Dissolved)	ug/L	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	U	12.0	300**	300
Lead (Dissolved)	ug/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	50	50
Magnesium (Dissolved)	ug/L	26300		24900		41400		40800		32300		39700		46600		54200		26300		
Manganese (Dissolved)	ug/L	109		2.0	U	345		3.0	U	113		134		278		10.2		109	50**	50
Mercury (Dissolved)	ug/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	2.0	2.0
Nickel (Dissolved)	ug/L	12.0	U	15.0	U	12.0	U	15.0	U	12.0	U	18.1		12.0	U	15.0	U	15.0	100	
Potassium (Dissolved)	ug/L	16300		13100		23600		15600		18000		20400		20900		18600		16300		
Selenium (Dissolved)	ug/L	11.2		9.6		5.0	J	8.9		13.4	J	4.3		18.2	J	19.8		11.2	50	50
Silver (Dissolved)	ug/L	3.0	UJ	4.0	U	3.0	U	4.0	U	3.0	U	4.0	U	3.0	U	4.0	U	4.0	50	50
Sodium (Dissolved)	ug/L	243000		191000		239000		203000		220000		221000		280000		265000		243000		
Thallium (Dissolved)	ug/L	4.0	U	2.0	U	4.0	U	2.0	U	4.0	U	2.0	U	4.0	U	2.0	U	4.0	2.0	
Vanadium (Dissolved)	ug/L	8.9	U	9.3		3.4	U	9.0		6.7	U	9.3		8.4	U	8.5		9.3		
Zinc (Dissolved)	ug/L	4.0	U	10.1	U	5.2	UJ	8.5	U	4.0	UJ	8.3	U	4.9	J	8.3	U	10.1	5000**	5000

* Site specific maximum background levels were the higher concentration from either of the two sampling rounds for detected analytes (values on right side of column); or the higher detection limit from either of the two sampling rounds for non-detected analytes (values on left side of column).

** EPA secondary maximum contaminant level

18.1 Shading and bold indicates that these concentrations exceeded the site specific maximum background level by three times (if detected in GER-01) or the detection limit (if not detected in GER-0

109 Outlined and bold indicates that these concentrations exceeded the most stringent MCLs.

345 Black shading indicates that these concentrations exceeded both the site specific maximum background level and the most stringent MCLs.

EPA	Environmental Protection Agency	QL	Qualifier
SDWA	Safe Drinking Water Act	ug/L	Micrograms per liter
MCL	Maximum Contaminant Level	U	Not detected
NDEQ	Nebraska Department of Environmental Quality	UJ	Estimated as non-detect at the instrument detection limit
GW	Groundwater	J	Estimated value

TABLE A-6

SUMMARY OF TRPH AND WATER QUALITY ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED DURING THE FIRST (MAY 1995) AND SECOND (AUGUST 1995) SAMPLING ROUNDS

Western Area Power Administration
Loveland Area Office - Sisic Foundry Site

Monitoring Well Number		GER-01				GER-02				GER-03				GER-04				Site Specific	Regulatory Limits	
Sample Number		GER-01-2001		GER-01-2002		GER-02-2001		GER-02-2002		GER-03-2001		GER-03-2002		GER-04-2001		GER-04-2002		Maximum	EPA	NDEQ
Sample Date		2-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		1-May-95		9-Aug-95		Background	SDWA	GW
Chemical	Units	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Result	QL	Level *	MCL	MCL
TRPH	mg/L	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0	UJ	1.0	U	1.0		
Total Dissolved Solids	mg/L	1600		920		1300		1100		1600		1300		2000		1600		1500	500**	
Total Suspended Solids	mg/L	820		13		1500		12	U	1000		14		450		48		820		
Chloride	mg/L	63		32		82		58		100		78		130		98		63	250**	250
Nitrate	mg/L	12		6.0		12		7.9		8.7		3.5		16		8.2		12	10	10
Sulfate	mg/L	380		280		400		360		470		410		760		610		390	250**	250
Alkalinity as Bicarbonate	mg/L	390		340		460		310		450		310		470		280		390		

* Site specific maximum background levels were the higher concentration from either of the two sampling rounds for detected analytes (values on right side of column); or the higher detection limit from either of the two sampling rounds for non-detected analytes (values on left side of column).

** EPA secondary maximum contaminant level

1600 Outlined and bold indicates that these concentrations exceed the most stringent MCLs

TRPH	Total Recoverable Petroleum Hydrocarbons	GW	Groundwater
EPA	Environmental Protection Agency	QL	Qualifier
SDWA	Safe Drinking Water Act	mg/L	Milligrams per liter
MCL	Maximum Contaminant Level	U	Not detected
NDEQ	Nebraska Department of Environmental Quality	UJ	Estimated as non-detect at the instrument detection limit

APPENDIX B

Standard Mitigative Measures for

Construction, Operation, and Maintenance of Transmission Lines

STANDARD MITIGATIVE PRACTICES

Mitigation Measure

1. The contractor shall limit the movement of its crews and equipment to the right-of-way (ROW), including access routes. The contractor shall limit movement on the ROW so as to minimize damage to grazing land, crops, or property and shall avoid marring the land.

2. When weather and ground conditions permit, the contractor shall obliterate all contractor-caused deep ruts that are hazardous to farming operations and to movement of equipment. Such ruts shall be leveled, filled, and graded, or otherwise eliminated in an approved manner. In hay meadows, alfalfa fields, pastures, and cultivated productive lands, ruts, scars, and compacted soils shall have the soil loosened and leveled by scarifying, harrowing, discing, or other approved methods. Damage to ditches, tile drains, terraces, roads, and other features of the land shall be corrected. Before final acceptance of the work in these agricultural areas, all ruts shall be obliterated, and all trails and areas that are hard-packed as a result of contractor operations shall be loosened, leveled, and reseeded. The land and facilities shall be restored as nearly as practicable to their original conditions.

3. Water bars or small terraces shall be constructed across all ROW and access roads on hillsides to prevent water erosion and to facilitate natural revegetation.

4. The contractor shall comply with all federal, state, and local environmental laws, orders, and regulations. Prior to construction, all supervisory construction personnel and heavy equipment operators will be instructed on the protection of cultural and ecological resources.

5. The contractor shall exercise care to preserve the natural landscape and shall 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 shall be preserved and shall be protected from damage by the contractor's construction operations and equipment. The edges of clearings and cuts through tree, shrubbery or other vegetation shall be irregularly shaped to soften the undesirable visual impact of straight lines. Where such clearing occurs in the Lake Mead National Recreation Area, the contractor shall consult with the on-site Park representative.

6. On completion of the work, all work areas except access roads shall be scarified or left in a condition which will 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 shall be repaired by the contractor.

7. Construction staging areas shall 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 shall be removed from the site. The area shall be regraded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

8. Borrow pits shall be excavated so that water will not collect and stand therein. Before being abandoned, the sides of borrow pits shall be brought to stable slopes, with slope intersections shaped to carry the natural contour of adjacent undisturbed terrain into the pit or borrow area giving a natural appearance. Waste piles shall be shaped to provide a natural appearance.

9. Construction activities shall be performed by methods that will 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.

10. Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses shall be conducted in a manner to prevent muddy water and eroded materials from entering the streams or watercourses by construction of intercepting ditches, bypass channels, barriers, settling ponds, or by other approved means.

11. Excavated material or other construction materials shall not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they can be wasted away by high water or storm runoff or can in any way encroach upon the actual watercourse itself.

12. Waste waters from concrete batching, or other construction operations shall not enter streams, watercourses, or other surface waters without the use of such turbidity control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such waste waters discharged into surface waters shall be essentially free of settleable material. For the purpose of these specifications, settleable material as defined as that material which will settle from the water by gravity during a 1-hour quiescent detention period.

13. The contractor shall utilize such practicable methods and devices as are reasonably available to control, present, and otherwise minimize atmospheric emissions or discharges of air contaminants.

14. The emission of dust into the atmosphere will not be permitted during the manufacture, handling, and storage of concrete aggregate, and the contractor shall use such methods and equipment as necessary for the collection and disposal, or prevention, of dust during these operations. The contractor's methods of storing and handling cement and pozzolans shall also include means of eliminating atmospheric discharges of dust.

15. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, shall not be operated until repairs or adjustments are made.

16. The contractor shall prevent any nuisance to persons or damage to crops, cultivated fields, and dwellings from dust originating from his operations. Oil and other petroleum derivatives shall not be used for dust control. Speed limits shall be enforced, based on road conditions, to reduce dust problems.

17. To avoid 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.

18. Burning or burying waste materials on the ROW or at the construction site will be permitted if allowed by local regulations. The contractor shall remove all other waste materials from the construction area. All materials resulting from the contractor's clearing operations shall be removed from the ROW.

19. The contractor shall make all necessary provisions in conformance with safety requirements for maintaining the flow of public traffic

and shall conduct its construction operations to offer the least possible obstruction and inconvenience to public traffic.

20. Western will apply necessary mitigation to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW, to the mutual satisfaction to the parties involved.

21. Structures will be carefully located to avoid sensitive vegetative conditions, including wetlands, where practical.

22. ROW will 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.

23. Removal of vegetation will be minimized to avoid creating a swath along the ROW.

24. Topsoil will be removed, stockpiled, and respread at all heavily disturbed areas not needed for maintenance access.

25. All disturbed areas not needed for maintenance access will be reseeded using mixes approved by the landowner or land management agency.

26. Erosion control measures will be implemented on disturbed areas, including areas that must be used for maintenance operations (access ways and areas around structures).

27. The minimum area will be used for access ways (12 feet to 15 feet wide, except where roadless construction is used).

28. Structures will be located and designed to conform with the terrain. Leveling and benching of the structure sites will be the minimum necessary to allow structure assembly and erection.

29. ROW will be located to utilize the least steep terrain and, therefore, to disturb the smallest area feasible.

30. Careful structure location will ensure spanning of narrow flood prone areas.

31. Structures will not be sited on any potentially active faults.

32. Structure sites and other disturbed areas will be located at least 300 feet, where practical, from rivers, streams (including ephemeral streams), ponds, lakes, and reservoirs.

33. New access ways will be located at least 300 feet, where practical, from rivers, ponds, lakes, and reservoirs.

34. At crossings of perennial streams by new access ways, culverts of adequate size to accommodate the estimated peak flow of the stream will be installed. Construction areas will minimize disturbance of the stream banks and beds during construction. The mitigation measures listed for soil/vegetation resources will be performed on areas disturbed during culvert construction.

35. If the banks of ephemeral stream crossings are sufficiently high and steep that breaking them down for a crossing would cause excessive disturbance, culverts will be installed using the same measures as for culverts on perennial streams.

36. Blasting will not be allowed.

37. Power line structures will be located, where practical, to span small occurrences of sensitive land uses, such as cultivated areas. Where practicable, construction access ways will be located to avoid sensitive conditions.

38. ROW will be purchased at fair market value and payment will be made of full value for crop damages or other property damage during construction or maintenance.

39. The Power line will be designed to minimize noise and other effects from energized conductors.

40. The precise location of all structure sites, ROW, and other disturbed areas will be determined in cooperation with landowners or land management agencies.

41. Crossing of operating railroads by construction vehicles or equipment in a manner that would cause delays to railroad operations will be avoided. Construction will be coordinated with railroad operators. Conductors and overhead wire string operations would use guard structures to eliminate delays.

42. Before construction, Western will perform a Class III (100 percent of surface) cultural survey on all areas to be disturbed, including structure sites and new access ways. These surveys will be coordinated with the appropriate land owner or land management agency. A product of the survey will be a Cultural Resources Report recording findings and suggesting mitigation measures. These findings will be reviewed with the State Historic Preservation Offices and other appropriate agencies, and specific mitigation

measures necessary for each site or resource will be determined. Mitigation may include careful relocation of access ways, structure sites, and other disturbed areas to avoid cultural sites that should not be disturbed, or data recovery.

43. The contractor will be informed of the need to cease work in the location if cultural resource items are discovered.

44. Construction activities will be monitored or sites flagged to prevent inadvertent destruction of any cultural resource for which the agreed mitigation was avoidance.

45. Construction crews will 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.

46. Should any cultural resources that were not discovered during the Class III Survey be encountered during construction, ground disturbance activities at that location will be suspended until the provisions of the National Historic Preservation Act and enabling legislation have been carried out.

47. Construction activities will be monitored or significant locations flagged to prevent inadvertent destruction of any paleontological resource for which the agreed mitigation was avoidance.

48. Clearing for the access road will be limited to only those trees necessary to permit the passage of equipment.

49. The access road will follow the lay of the land rather than a straight line along the ROW where steep features would result in a higher disturbance.

APPENDIX C

REPORT ON CY 1995 ACCOMPLISHMENTS
MITIGATION ACTION PLAN
FOR THE
MEAD-PHOENIX TRANSMISSION LINE PROJECT

REPORT ON CY 1995 ACCOMPLISHMENTS
MITIGATION ACTION PLAN
FOR THE
MEAD-PHOENIX TRANSMISSION LINE PROJECT

Prepared to Accompany DOE/EIS-0107-F

Prepared by:

Division of Environmental Affairs
Western Area Power Administration
Golden, CO

UPDATED January 5,1996

JANUARY 1995
UPATE TO THE MITIGATION ACTION PLAN FOR THE
MEAD-PHOENIX TRANSMISSION LINE PROJECT

As of January, 1994, several modifications to the mitigation action plan have occurred as a result of discussions with land management agencies and resource management agencies, particularly the U.S. Bureau of Land Management, the National Park Service, and the Arizona Department of Fish and Game. These modifications are directed primarily at sensitive plant species, the desert tortoise (both Mojave and Sonoran populations) and birds of prey. An example of this modifications would include the decision to relocate Arizona and Nevada native plants of concern out of "harms way" rather than salvage by transporting them to a collection point for distribution to the general public.

Additionally, Western reinitiated Section 7 consultation with the U.S. Fish and Wildlife Service in July, 1993, as a result of some designations of proposed critical habitat for the Mojave desert tortoise in the Nevada portion of the project.

Modifications to the mitigation measures which have occurred since it was written are presented in bold type in Appendix A. Activities which have been completed are underlined.

Appendix A frequently refers to "survey prior to construction" and "avoid sensitive features" in the Mitigation section. These measures will be accomplished by having qualified personnel conduct preconstruction surveys for the resource of concern, and by having appropriate technical experts, such as archaeologists and biologists, at the locations of resources of concern during structure siting and construction activities. Identification of a sensitive resource and subsequent actions will be coordinated with the appropriate resource management agency. All pre-construction surveys and monitoring studies will be coordinated with land owners/managers. Surveys for listed and candidate plant species will be conducted during the appropriate phenology for identification of the plant species. Because plant species are being reclassified, mostly in their candidate status, contact with the appropriate state and Federal agency will be necessary prior to beginning these surveys. Surveys for species protected by the Arizona "Native Plant Law" and the Nevada "Cactus and Yucca Law" will be coordinated with the appropriate state agency. Relocation

of salvaged plant material, if needed, will be coordinated with the landowner or resource management agency.

SURVEYS FOR PLANTS OF CONCERN TO THE STATE OF ARIZONA, THE U.S. FISH AND WILDLIFE SERVICE, THE U.S. BUREAU OF LAND MANAGEMENT, AND THE NATIONAL PARK SERVICE WERE CONDUCTED INITIALLY DURING THE PERIOD APRIL-MAY, 1993. IN ADDITION, SURVEYS AND FLAGGING OF CERTAIN SPECIES OF CONCERN ARE ONGOING IN FRONT OF ACCESS ROAD AND STRUCTURE PAD CLEARING CREWS. THESE LATTER SURVEYS IDENTIFY SENSITIVE SPECIES WHICH NEED TO BE EITHER AVOIDED OR RELOCATED TO MINIMIZE LOSS OF PLANTS. IN THE CASE OF ARIZONA CLIFFROSE, ACCESS ROADS ARE BEING LAID OUT SO THAT ANY EROSION THAT MAY OCCUR WILL NOT ADVERSELY AFFECT THE INDIVIDUAL PLANTS DOWN-GRADIENT FROM THE ROAD.

In November, 1994, Western again re-initiated Section 7 consultation with the U.S. Fish and Wildlife Service to request an increase in the "take" of Mojave desert tortoises. The request was based on the fact that the project sponsors added several reasonable and prudent measures to the construction to minimize adverse impacts to the tortoises. For example, based on an increased number of tortoises found in the Nevada portion of the project the National Park Service will be capturing and marking some of the tortoises in the vicinity of the right-of-way, to ascertain their movements and daily and seasonal activities.

The Kingman, Arizona, school district requested several species of native plants be provided for a desert nature center. When those species requested were encountered in an area that required they be moved, efforts were made to deliver them to the school district.

Monitoring efforts for desert tortoise intensified in 1995. Biologists accompanied every construction activity group in the Nevada portion of the line. During the course of construction of the line one desert tortoise was found dead in August, 1994, and two more were found in May, 1995, all in the Lake Mead National Recreation Area. Western petitioned the U.S. Fish and Wildlife Service to not count all three tortoises as part of the project's take, due to the fact that construction activity was limited in the area, recreational vehicles were in the vicinity, and the National Park Service had asked that the access road not be blocked off. The U.S. Fish and Wildlife Service agreed that circumstances surrounding the death of one of the tortoises were such that it was probably not killed by construction activity.

Western also obtained permission to take (harass) a golden eagle nest in Arizona, near the Nevada border. During construction, it was found that the nest was not active.

AS CONSTRUCTION ACTIVITIES GAINED SPEED DURING THE 1994 SEASON, NEARLY ALL PRE-CONSTRUCTION MITIGATION MEASURES WERE ALSO COMPLETED. SURVEYS FOR PLANTS OF CONCERN TO THE STATES OF ARIZONA AND NEVADA, THE U.S. FISH AND WILDLIFE SERVICE, THE U.S. BUREAU OF LAND MANAGEMENT, AND THE NATIONAL PARK SERVICE WERE COMPLETED INITIALLY DURING THE PERIOD 1994. FLAGGING AND/OR SALVAGE OF SPECIES OF CONCERN WERE ALSO COMPLETED. IN THE CASE OF ARIZONA CLIFFROSE, ACCESS ROADS WERE LAID OUT SO THAT ANY EROSION THAT MAY OCCUR WILL NOT ADVERSELY AFFECT THE INDIVIDUAL PLANTS DOWN-GRADIENT FROM THE ROAD. SURVEYS FOR ENDANGERED, THREATENED, OR SENSITIVE WILDLIFE SPECIES WERE ALSO COMPLETED. MONITORING OF CONSTRUCTION ACTIVITIES WAS UNDERWAY AT ONE TIME OR ANOTHER THROUGHOUT THE ENTIRE YEAR OF 1994.

APPENDIX A

MITIGATION OF IMPACTS BY RESOURCE, LINK NUMBER AND MILE SEGMENT

APPENDIX A-1

LAND USE

LINK NO.	MILE SEGMENT	IMPACT	MITIGATION
3/5	4.6-4.7	Crosses corral	Place structures to avoid sensitive features
	31.2-31.3	Crosses cemetery	Place structures to avoid sensitive features. **REROUTED LINE AWAY FROM CEMETERY.**
21a	1.9-10.5	Crosses two dwellings	Purchase dwellings at landowner request. **DWELLINGS PURCHASED.**
68	0.0-0.3	Near airfield	Place line parallel to glidepath
14c	1.7-2.4	Crosses proposed state natural area	Place structures to span sensitive features

APPENDIX A-2

VISUAL RESOURCES

LINK NO.	MILE SEGMENT	IMPACT	MITIGATION
21a	0.3-1.3	Background visual impacts	Use nonspecular conductors and place structures to avoid sensitive features
	1.3-1.9	Foreground/ middleground impacts	Use dull steel on towers, nonspecular conductors and avoid sensitive features
	1.9-10.5	High visual impact	Use special tower design, dull steel towers, nonspecular conductor, and avoid sensitive features

78	0.0-3.1	High visual impact	Use dull steel on towers, nonspecular conductors and avoid sensitive features

APPENDIX A-3

BIOLOGICAL RESOURCES

LINK NO.	MILE SEGMENT	IMPACT	MITIGATION
1	0.0-16.7	Desert bighorn critical habitat	Survey prior to construction, avoid during critical period. **DELETED PRECONSTRUCTION SURVEY, THERE WILL BE NO CONSTRUCTION DURING JANUARY THROUGH APRIL.**
	0.0-16.7	**DESERT TORTOISE HABITAT**	**SURVEY PRIOR TO CONSTRUCTION, AVOID TORTOISE BURROWS OR MOVE TORTOISES.** SURVEYS CONDUCTED APRIL-MAY, 1994.
	0.0-26.5	Penstemon bicolor habitat	Survey prior to construction, coordinate with FWS **AND NPS** if found. SURVEY CONDUCTED APRIL-MAY, 1993.
	7.0-11.0	Raptor nesting area	Survey prior to construction, avoid active nest sites, mark line at river crossing. FIRST SURVEY CONDUCTED MAY, 1993. SECOND SURVEY CONDUCTED IN MARCH, 1994. THIRD SURVEY CONDUCTED IN APRIL, 1995.
3/5	0.0-31.0	Raptor nesting area	Survey prior to construction, avoid active nest sites. FIRST SURVEY CONDUCTED MAY, 1993. SECOND SURVEY CONDUCTED MARCH, 1994. THIRD SURVEY CONDUCTED IN APRIL, 1995.
13	12.0-14.6	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEYS CONDUCTED IN APRIL-MAY, 1994.

14a	0.0-25.0	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEYS CONDUCTED IN APRIL-MAY, 1994.
14b	0.0-22.4	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEYS CONDUCTED IN APRIL-MAY, 1994.
14b	10.0-22.5	Arizona cliffrose habitat	Survey prior to construction, coordinate with FWS if found. **LOCATE ACCESS ROADS TO MINIMIZE SECONDARY IMPACTS DUE TO EROSION.** SURVEY CONDUCTED APRIL-MAY, 1993.
14b	17.0-19.0	Raptor nesting area	Survey prior to construction, avoid active nest sites. FIRST SURVEY CONDUCTED MAY, 1993. SECOND SURVEY CONDUCTED MARCH, 1994. THIRD SURVEY CONDUCTED IN APRIL, 1995.
14c	0.0-1.3	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEYS CONDUCTED IN APRIL-MAY, 1994.
17	0.0-4.8	Important desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEYS CONDUCTED IN APRIL-MAY, 1994.
	4.8-15.5	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEYS CONDUCTED IN APRIL-MAY, 1994.
10	0.7-33.2	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEY CONDUCTED JANUARY, 1994.
	33.2-39.0	Important desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEY CONDUCTED DECEMBER, 1993.

	39.0-41.3	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEY CONDUCTED DECEMBER, 1993.
21a	1.7-6.2	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEY CONDUCTED NOVEMBER, 1993.
	6.2-10.0	Important desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEYS CONDUCTED IN APRIL-MAY, 1994.
35	4.2-5.8	Riparian habitat	Avoid during construction
	15.0-16.1	Riparian habitat	Avoid during construction
78	0.0-3.1	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEY CONDUCTED NOVEMBER, 1993.
	1.0-1.8	Riparian habitat	Avoid during construction
76	0.0-16.5	Penstemon bicolor habitat	Survey prior to construction, coordinate with FWS **AND NPS** if found. SURVEY CONDUCTED IN APRIL-MAY, 1993.
77	0.0-3.0	Desert tortoise habitat	Survey prior to construction, avoid tortoise burrows or move tortoises. SURVEY CONDUCTED NOVEMBER, 1993.

APPENDIX A-4

EARTH RESOURCES

ALL GEOTECHNICAL SURVEYS WERE COMPLETED BY END OF 1993.

LINK NO.	MILE SEGMENT	IMPACT	MITIGATION
35	0.0-1.3	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
	1.8-2.0	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
	2.3-2.4	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
	2.9-4.8	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
	6.8-8.8	Erosion potential	Avoid sensitive features, close unneeded access roads
68	0.0-0.1	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
	0.2-0.5	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
	1.7-1.9	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
77	0.0-4.6	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads
78	0.0-0.8	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads

	1.3-2.0	Erosion potential	Avoid sensitive features, close unneeded access roads
	2.3-3.1	Erosion potential	Geotechnical survey during structure siting, close unneeded access roads

APPENDIX A-5

CULTURAL RESOURCES (The locations of cultural resource mitigation will be given by site number to avoid disclosure)

SITE NUMBER	SITE CLASS	MITIGATION
NA9,088	Prehistoric	No construction activities between 8427+00 and 8430+00. Use existing access roads.
NA17,314	Prehistoric	No construction activities between 776+50 and 778+50. Use existing access roads.
NA18,133	Prehistoric	Access road will "tee" off of existing access road. Structure laydown & assembly, and crane pad will be north of structure. Monitor during construction. No other construction activities between 9996+00 and 9998+00.
NA18,134	Prehistoric	No construction between 9916+00 and 9921+00. Use existing access road with NO upgrading.
NA18,135	Prehistoric	No construction between 9784+50 and 9794+50 except structure erection. Use existing access roads.
NA18,138	Prehistoric	No restrictions
NA18,144	Prehistoric	No construction between 8989+00 and 8991+50. Use existing access roads.

NA18,145	Prehistoric	No construction activities between 8216+00 and 8219+00. Use existing access road with **NO** upgrading.
NA18,147	Prehistoric	No construction activities between 8073+00 and 8076+00. Use existing access road with **NO** upgrading.
NA18,152	Prehistoric	No construction activities between 7007+00 and 7008+50. Use existing access roads.
NA18,153	Prehistoric	No construction activities between 5866+00 and 5868+00. Use existing access roads.
NA18,157	Prehistoric	No construction activities between 4652+50 and 4654+50. Use existing access road with **NO** upgrading.
NA18,158	Prehistoric	No construction activities between 4623+00 and 4626+00 and between 4629+00 and 4633+00. Access to structure 404 will "tee" off of existing access road.
NA18,159	Historic	No construction activities between 4231+00 and 4233+00. Use existing access road with **NO** upgrading.
NA18,160	Historic	Outside right-of-way

NA18,164	Historic	No construction activities between 4094+00 and 4097+00. Use existing access road.
NA18,172	Prehistoric	Use existing access roads between 7465+00 and 7527+00. Access to structures 648, 649, 650, 651, 652, and 653 will "tee" off existing access road. If pulling station or other ground disturbing activities are necessary between stations, and archaeologist will monitor activity.
NA18,173	Prehistoric	Data recovery will take place prior to construction. No construction between stations 7340+00 and 7355+00 until clearance is given by Western.

APPENDIX D

REPORT ON THE MITIGATION ACTION PLAN FOR THE SACRAMENTO OPERATIONS CENTER

REPORT ON THE MITIGATION ACTION PLAN FOR THE SACRAMENTO OPERATIONS CENTER

The Sacramento Area Office proposed to construct an operations center (SOC) in Folsom, California to eliminate overcrowding at its existing Sacramento facilities and improve operation efficiency. Habitat for one federally listed threatened species, the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), was identified at the project site. Of the two shrubs identified, one would be affected by the proposed action. Mitigation and compensation measures were subsequently established.

Mitigation and compensation measures implemented at the SOC:

- Location of a mitigation area was identified in the northernmost portion of the property.

- The relocation of the one elderberry shrub occurred on November 13, 1992, and followed the guidelines specified by the U.S. Fish and Wildlife Service. [To increase the likelihood of plant survival, transplanting and replacement planting was conducted during the winter months (November through March) when the shrub was dormant.]

- Protective construction fencing was installed around the second elderberry shrub on the site.

- Habitat compensation planting occurred on March 11, 1993. The replacement planting ratio used to mitigate the transplanted elderberry shrub was 5:1. Transplanting efforts followed the recommended guidelines specified by the U.S. Fish and Wildlife Service and included 20 elderberry seedlings, 8 oak saplings, a bubbler irrigation system and protective chain-link fencing.

- Meeting with USFWS to review possible impacts to 10-acre site on October 19, 1993.

- Transmitted letter to USFWS to apprise them of results of the mitigation and monitoring effort on October 26, 1993.

- A couple of bushes were replaced prior to end of construction and the irrigation system repaired after tampering by a vagrant was discovered.

- Task order prepared for contractor to monitor mitigation area for first three years until buildings are occupied and Western personnel on hand.

- Surveys conducted in 1994 indicated that only two of the 20 elderberry plants had not survived. All oak saplings were surviving.

- Surveys conducted in 1995 indicated that all of the remaining 18 elderberry plants had survived. All oak saplings were surviving.

1994 ENVIRONMENTAL MITIGATION SURVEYS/MONITORING FOR LAO

STATE	PROJECT	ACTIVITY	DATE
Wyoming	Carter Mountain-Thermopolis 230-kV	Sage grouse survey, no leks found.	April 11, 1994
"	"	Inspection of construction disturbance to stream crossings, no significant disturbance.	June 14, 1994
"	"	No stringing in pronghorn spring migration corridors between Apr 1 and June 15.	Stringing occurred after June 15.
"	Big George-Carter Mountain 115-kV	Rare plant survey for Evert's waferparsnip, no habitat found.	April 12, 1994
"	"	Raptor nest survey, one RTH active nest found, recommended no construction 3/15 to 7/31 per WDG&F.	April 16, 1994
"	"	Prairie dog & black-footed ferret survey, additional monitoring is required during construction.	August 1994

"	"	Prepared Pollution Prevention Plan for stormwater runoff.	Fall-Winter 1994
Wyoming	Platte Pipeline Shoofly 34.5-kV	Installed "bird guards" near bald eagle wintering area.	August to December 1994
Wyoming	Lingle Power Plant	Surveyed for rare bats,(fringed-tailed myotis, no habitat and no signs of bat roosting), completed Draft Biological Assessment.	October 1994; November 1994
Nebraska	Limestone-Gering-McGrew 69-kV	Monitored geologic formation for paleo resources, area was not disturbed.	May 6, 1994
Nebraska	Sidney-North Yuma 230-kV	Inspected Black Hills Trail for construction impacts, checked on installation of marker balls at South Platte River crossing (bald eagle wintering area). Trail was not disturbed. Marker balls were installed as recommended by CDOW.	October 14, 1994

Colorado	Brush Maintenance Building	Surveyed for endangered species (black-footed ferret, swift fox), none found.	September 15, 1994
Colorado	Prospect Valley Tap-Sand Creek	Helicopter survey for endangered species habitat (prairie dog towns, raptor perches, wetland habitat), none found.	September 1994
Colorado	Flatiron-Erie 115-kV Uprate	Surveyed wetlands for endangered plant (Ute Ladies Slipper Orchid), none found.	August 1994
Colorado	Fort Morgan North 115-kV Tapline	Surveyed for endangered species habitat(p-dog towns, swift fox, and raptors) and wetland habitat. Proposed marker balls for wintering eagles, avoided locating structures in wetlands.	March 1994

Colorado	Wood Pole Replacement #1	Field reconnaissance for endangered species(p-dog towns, raptors) and wetland habitat, one structure in wetland location. Winter construction minimized impacts. Field check scheduled for spring 95.	Spring 1994

DISTRIBUTION

Office of Environmental Policy and Asistance, EH-41

Office of Environmental Audit, EH-24

Office of NEPA Policy and Assistance, EH-42

Office of Science and Technological Information

DOE Scientific and Technical Information Center

Corporate Service Office, Western Area Power Administration,

A0000, A0200,A0300, A0500, A0600, A1000, A3000, A8000

Area Manager, B0000, Upper Great Plains Customer Serivce Region

Area Manager, G0000, Desert Southwest Customer Service Region

Area Manager, J0000, Rocky Mountain Customer Service Region

Area Manager, N0000, Sierra Nevada Customer Service Region

Area Manager, L0000, Customer Service Center (Salt Lake City)

Environmental Manager, B0400, Upper Great Plains CSR

Environmental Manager, G0400, Desert Southwest CSR

Environmental Manager, J0400, Rocky Mountain CSR

Environmental Manager, N0400, Sierra Nevada CSR

Environmental Manager, L0400, Customer Service Center (Salt Lake City)