

PREFACE

The Western Area Power Administration (Western) has established a formal environmental protection, auditing, monitoring, and planning program which has been in effect since 1978. The significant environmental projects and issues Western was involved with in 1991 are discussed in this annual site environmental report. It is written to demonstrate the nature and effectiveness of the environmental protection program.

The Department of Energy Order 5400.1, Chapter II.4, requires the preparation of an annual site environmental report. Because Western has numerous facilities located in fifteen states, this report was written to address the environmental activities in all of the facilities as one "site."

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1.0 INTRODUCTION

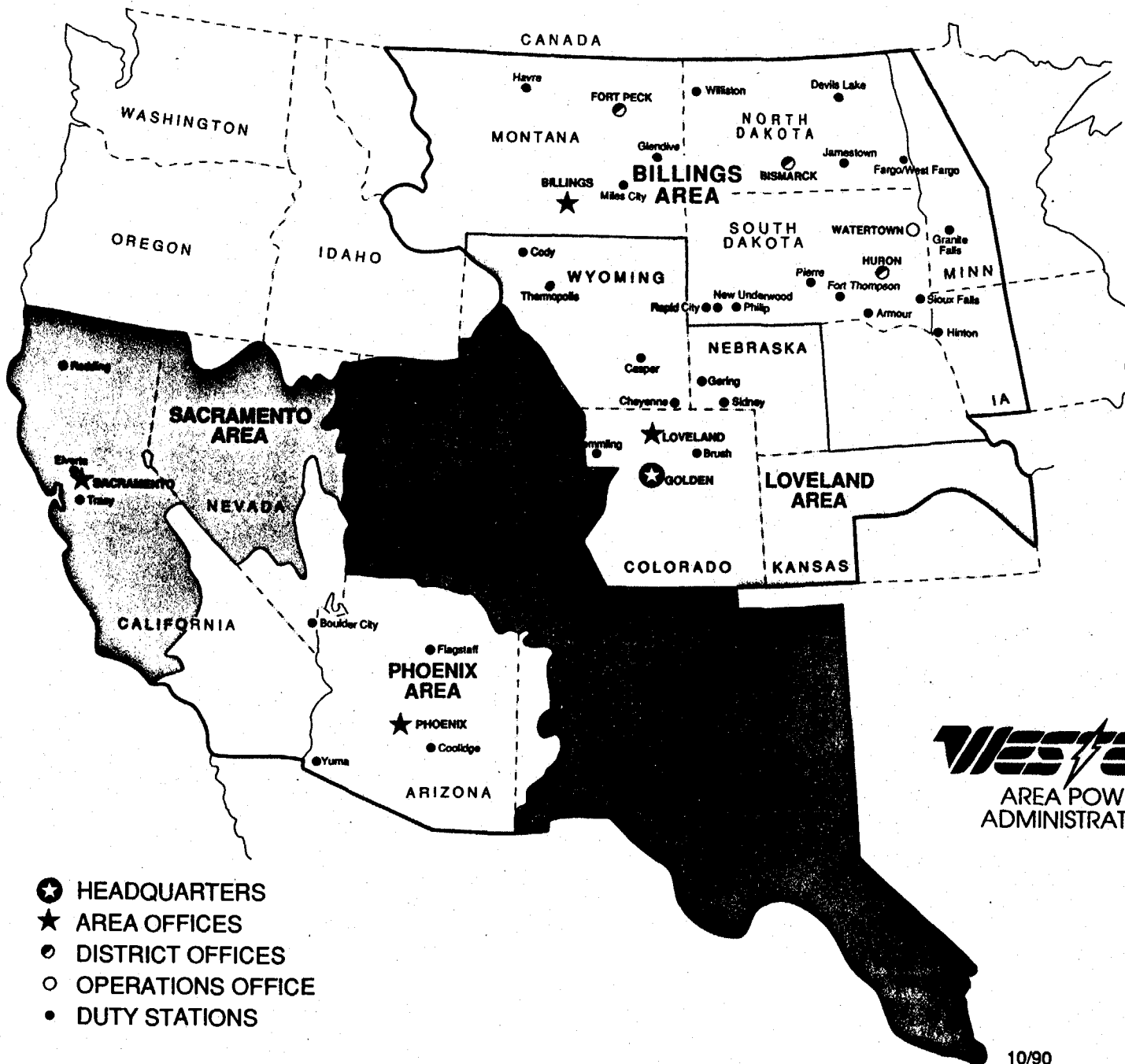
The Western Area Power Administration (Western) was established on December 21, 1977, pursuant to Section 302 of Public Law 95-91, the Department of Energy Organization Act dated August 1, 1977. Western is responsible for the Federal electric power marketing and transmission functions in 15 central and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

In 1991, Western provided power to 615 wholesale power customers consisting of 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 is responsible for the operation and maintenance of 16,664 miles of transmission lines, 265 substations, and various appurtenant power facilities in the States listed above. Western also is 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 51 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 10,389 megawatts (MW). In 1991, Western sold 34 billion kilowatt hours of electricity which generated more than \$641 million in revenues.

Western's organization consists of the Headquarters Office located in Golden, Colorado, and five Area Offices located in Billings, Montana; Phoenix, Arizona; Loveland, Colorado; Sacramento, California; and Salt Lake City, Utah. Additionally, there are five District Offices and six power dispatching centers. The Western marketing area is shown in Figure 1. Through its power marketing and transmission program, Western is required to secure revenues to meet the annual costs of operation and maintenance of transmission facilities, purchased power, wheeling, and other expenses. Western is also required to repay within allowable time periods all of the power investment plus interest and that portion of the Government's irrigation and other non-power investments that are beyond the water users repayment capability.

DUTY LOCATIONS



- ★ HEADQUARTERS
- ★ AREA OFFICES
- DISTRICT OFFICES
- OPERATIONS OFFICE
- DUTY STATIONS

2.0 SUMMARY

Many state and federal environmental protection laws and regulations are applicable to Western facilities. The challenge for effective environmental management under increasing requirements is being met by incorporating procedures that improve efficiency and responsiveness.

Western facilities are located in areas under the jurisdiction of six Environmental Protection Agency (EPA) Regions and 15 states. To help assure conformance with all regulatory requirements, Western developed Environmental Protection Implementation Plans (EPIPs) in accordance with DOE Order 5400.1, for Headquarters and each of the five Area Offices. The EPIPs establish environmental protection programs that define Western's environmental compliance program, the overall environmental protection and pollution prevention goals and objectives. Additionally, Western Headquarters has begun compiling the Long Range Environmental Plan, also required by DOE Order 5400.1, to provide general guidance for compliance with environmental laws and regulations as they pertain to environmental protection compliance issues. 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) which regulates the use of polychlorinated biphenyls (PCB). Western's policy is to eliminate PCBs wherever economically and operationally possible in order to lessen the impact of PCB regulations. Western has undertaken efforts to minimize procurement expense and maximize contracting efficiency by coordinating PCB removal activities throughout Western's power marketing system.

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 which exposes sheep to high voltage AC fields.

Throughout 1991, Western's environmental planning continued toward increasing public and agency involvement early in the planning process of proposed projects. This emphasis on early scoping of environmental issues, which follows the amended DOE Guidelines for Compliance with NEPA, is done 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.

Large scale projects and projects with a high potential for significant environmental impacts are analyzed within the framework of environmental assessments and impact statements. The majority of Western's 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

The Western Area Power Administration (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, numerous regulations have been either proposed or finalized as a result of the Hazardous and Solid Waste Amendments of 1984 (HSWA). HSWA-based regulations impact Western most significantly by classifying some facilities as small quantity generators of hazardous waste. HSWA also impacted Western by prohibiting the landfilling of liquids, dioxin-containing wastes, and certain solvents.

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". Western's required permits are ongoing and current.

The Hinton Hazardous Waste Storage Facility located in Hinton, Iowa, was the site of a spill of a pole-treating mixture containing pentachlorophenol (PCP) resulting in the generation of F027 waste. The Hinton facility submitted a Part B Permit application and is under a Federal facility agreement negotiated in 1986 with EPA Region VII, which requires the site to be managed in accordance with RCRA standards. The

PCP contaminated soil was removed and is stored at the hazardous waste storage facility. The Hinton Substation underwent a hazardous waste storage facility inspection in March of 1990 and a RCRA inspection in 1991. A two count Notice Of Violation was issued by the Environmental Protection Agency (EPA). These violations have been corrected to the satisfaction of the EPA in Region VII.

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 1991.

Western removed four underground storage tanks at the Montrose Power Operations Center in Montrose, Colorado, and one underground storage tank at the Hayden Substation near Hayden, Colorado. Closure of all five tanks was in accordance with State regulations.

A leaking underground storage tank was discovered in 1985 at the Huron facility in South Dakota. At the direction of the State of South Dakota, monitoring wells were installed to determine if off-site migration was taking place. In December 1990, the State required Western to place an additional monitoring well on-site for further verification regarding off-site migration. The installation was accomplished in 1991 and the monitoring data for the year is found in Table 5.

3.1.2 Toxic Substances Control Act - (TSCA)

Western continued the removal and proper disposal of PCBs from facilities during 1991. An agency-wide PCB transportation and disposal contract ensures consistent and proper handling of PCB waste material. The contractor transports and disposes of the PCBs and prepares all necessary paperwork, including certificates of destruction or disposal. Western reduced the risk of future PCB spills by removing and disposing of more than 258,000 kg of PCB-contaminated oil and equipment.

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. Many revisions apply to Western.

Western does not have any sites currently listed on the National Priority List (NPL), but the Agency has taken a proactive role by conducting Preliminary Assessments and Site Investigations (PA/SI) at sites which could have the potential for contamination. The Montrose Power Operations Center, located in Montrose, Colorado, notified EPA of hazardous waste storage activities in the early 1980's as did the Watertown Substation in Watertown, South Dakota, and Casper Maintenance Yard in Casper, Wyoming. None of these sites are RCRA hazardous waste Treatment, Storage or Disposal Facilities, but because they have facilities for storage of PCB wastes, the sites were listed on the docket. Preliminary Assessments and screening Site Investigation final reports were completed in 1991.

Update No. 4 of the Federal Agency Hazardous Waste Compliance docket listed 18 Western facilities. In December 1991 when Update No. 5 was published, 15 of the 18 facilities had been deleted from the list. However, in a proactive move, Western continued to conduct Preliminary Assessments on all 18 facilities. The Preliminary Assessments of the Elverta Maintenance Facility and the Keswick Substation, both located in California, were completed in 1991. The Site Investigations required for both sites will be finalized in 1992.

In 1987, Western acquired a 1.45 acre parcel of land east of the Gering Substation in Gering, Nebraska, with the intent of using the area for expansion of the existing substation. An inactive foundry and machine shop is located on the parcel. After acquiring the property, Western suspected that it was contaminated with heavy metals and solvents associated with activities conducted at the site by the prior owners. Western conducted a site visit and reconnaissance of the facility in March of 1990. Based on the results of the reconnaissance, Western determined that a more detailed environmental investigation was necessary. Western conducted a Preliminary Assessment in early 1991. This facility was listed on the Federal Agency Hazardous Waste Compliance docket Update No. 5 which was published in December 1991. The final Site Investigation report was submitted to EPA Region 7 in early 1992.

The Tracy Substation located in California, was transferred to Western from the Bureau of Reclamation for the purpose of building the California Oregon Transmission Project. The Sacramento Area Office has completed a Preliminary Assessment and a Site Investigation at the Tracy facility. Based on the findings, remedial action began in 1990 and was completed in 1991.

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

The regulations resulting from FIFRA that pertain to proper use and application of pesticides are applicable to Western. Western is an end user, not a producer, of pesticides. Pesticides are used by Western to control weeds and for wood preservation. Small amounts of pesticides are used for rodent control.

It is anticipated that the endangered species labeling requirements proposed by EPA may have some minor effect in future years on Western and its contractors. Western and its contractors continued their efforts to comply with the endangered species labeling requirements.

3.1.5 Clean Air Act - (CAA)

Several potential sources of air emissions exist at Western facilities that are regulated under the Clean Air Act: 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.

Some states also regulate the removal and disposal of friable asbestos. Western personnel are aware of the need to notify all appropriate regulatory agencies

when planning renovation and demolition projects, and to assure proper disposal of asbestos wastes.

3.1.6 Safe Drinking Water Act - (SDWA)

3.1.6.1 Underground Injection Control (UIC)

As required by UIC regulations, Sacramento and Loveland Area Offices, located respectively in California and Colorado, have submitted inventory information to EPA regional offices to retain authorization by rule. All wells found to date, at the facilities, are classified as Class V injection wells.

It has been discovered that floor drains within some battery rooms and vehicle maintenance buildings are connected to dry wells. Some air compressors used on power circuit breakers send small quantities of blow-by oil into dry wells. The Sacramento Area Office is working with EPA Region IX to obtain permission to permanently abandon all of the battery and oil room injection wells. 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.

The Loveland Area Office is in the process of closing all injection wells in accordance with State requirements. The Loveland Area received approval from the State of Nebraska to abandon the class IV injection wells at the Stegall and Sidney Substations with no further action required after submittal of the plugging affidavits. Approval was also received from the State of Wyoming for work plans to verify the level of 1,1,1-trichloroethane contamination below the Cody Service Center dry wells. The final report of results with recommendations will be submitted to the State in early 1992.

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 Clean Water Act 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 has 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 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, pollutants, or 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 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. One hundred twenty-three facility SPCC plans were reviewed, amended, or recertified in 1991. Water pollution control regulations found in 40 CFR §112 also provide guidelines for construction of structures to prevent spilled oil from reaching navigable waters. Western follows these guidelines when designing new facilities or refurbishing existing substations. Two containment structures were designed and constructed in 1991.

The Miles City Converter Station, located in Montana, is a back-to-back, alternating-current to direct-current converter facility. This facility has been granted a water pollution control permit from the State of Montana. This facility is required to conduct a quarterly groundwater monitoring program for the on-site coolant system evaporation pond.

3.1.8 Hazardous Materials Transportation Act - (HMTA)

Much of the hazardous and toxic materials transported for Western is shipped via contracted-commercial haulers. However, trained and qualified Western employees occasionally transport toxic materials from one facility to another.

Hazardous waste transportation requirements for the California Department of Health Services are more extensive than those of the U.S. Department of Transportation (DOT). Therefore, the Sacramento Area Office and Phoenix Area Office must have a California waste hauler's permit for the transportation of PCB wastes. In 1991, the permit for vehicle inspections and insurance were renewed by both Area offices. The annual report on quantities shipped was provided to the State as required by their waste hauler's permit.

3.1.9 National Historic Preservation Act - (NHPA)

During 1991, Western initiated or continued previous cultural resource compliance efforts for 32 projects in 9 states. The projects included the construction of substations, microwave communication facilities, and electrical transmission lines. In accordance with Section 106 of the National Historic Preservation Act, as amended, Western solicited the comments of the President's Advisory Council on Historic Preservation regarding these projects. As part of its environmental planning process, Western consulted with the State Historic Preservation Officers in 9 states in order to successfully inventory and evaluate cultural resources within the proposed project areas. This allowed Western to identify possible effects of the projects on significant cultural resources. Plans were then implemented to mitigate potential project effects on significant cultural resources.

3.2 CURRENT ISSUES

The DOE Office of Audit conducted a Line Program Environmental Management Audit in December. A total of nineteen findings were identified by the audit team. Seven of the nineteen findings were compliance findings, in that the audit team felt that Western was not in compliance with DOE Orders. The remaining twelve were "Best Management Practice" findings. Western received the final audit report in late May 1992 and is preparing the final remedial action plan.

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 1991**

<u>FACILITY</u>	<u>STATE</u>	<u>SPILLED SUBSTANCE</u>
Pinnacle Peak Substation	AZ	PCB-containing Dielectric Fluid (<RQ)
Parker Dam Substation	AZ	PCB-containing Dielectric Fluid (<RQ)
Hoover Dam Arizona-Nevada Switchyard	NV	PCB-containing Dielectric Fluid (<RQ)
Valley City Substation	ND	PCB-containing Dielectric Fluid (<RQ)
Bismark	ND	Dielectric Fluid Mineral Oil (<RQ)
Denison Substation	IA	PCB-containing Dielectric Fluid (<RQ)
Mitchell Substation	SD	Dielectric Fluid Mineral Oil (<RQ)
Wintu Power Plant	CA	PCB-containing Dielectric Fluid (<RQ)
Folsom Substation	CA	PCB-containing Dielectric Fluid (<RQ)

Reportable quantity (RQ) is the quantity of hazardous/toxic substance for which reporting of a spill or discharge is required. Under the National Contingency Plan all spills involving 1 pound or more by weight of PCBs (>RQ) must currently be reported to the National Response Center. Notification should be in the shortest possible time after discovery, but in no case later than 24 hours after discovery. Spills of less than 1 pound of PCBs by weight (<RQ) must be cleaned up in accordance with TSCA requirements, but notification of EPA is not required.

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 1991

<u>NAME</u>	<u>ISSUING AGENCY</u>	<u>STATUS</u>	<u>EXPIR. DATE</u>
404 Permit-			
Nationwide	U.S. Army Corps	Ongoing	None
Hazardous Waste			
Hauler Registration	State of CA	Renewed	10/31/91
Variance Application	State of CA	Obtained	10/31/91
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
Water Quality			
Miles City Converter	State of Montana	Ongoing	5/31/94
Virginia Smith Converter Station	State of Nebraska	Ongoing	Annually
RCRA Part B Permit			
Permit for Hinton Hazardous Waste Storage Facility	U.S. EPA	Pending	N/A
Gasoline Dispensing Facility Permit	Air Pollution Control District	Ongoing	9/91

3.4. COMPLIANCE SUMMARY (JANUARY THROUGH MARCH 1992)

National Environmental Policy Act (NEPA). Western has several environmental assessments (EA) and EIS in various stages of the NEPA process. The most notable are described here.

Billings Area Office: Categorical Exclusions completed were (1) Sioux City garage/storage building; (2) Rapid City storage building; and (3) Jamestown substation expansion. Categorical Exclusions submitted this quarter were (1) Miles City converter station storage facility; (2) Sioux City transformer replacements; (3) Pierre substation equipment replacements; (4) Fargo substation equipment replacements; and 5) Phillip substation replace existing warehouse with new garage/maintenance building.

Loveland Area Office: The Section D Categorical Exclusion for Badwater Substation was approved by Headquarters and a notice of determination was provided to the State of Wyoming in mid-March. An Environmental Assessment determination was prepared and submitted to Headquarters for the Windy Gap-Granby Pumping Plant-West Portal Transmission Line Project. Submitted the Environmental Assessment and draft FONSI for Carter Mountain-Thermopolis for processing and approval. Received approval of the Flatiron-Erie Project EIS Implementation Plan.

Phoenix Area Office: The Area Office prepared a Categorical Exclusion determination for the warehouse modification at Gila Substation and prepared a Notice of Intent for the Adelanto-Lugo Transmission Line project.

Salt Lake City Area Office: Discussions are continuing with Argonne for the Phase III (Impact Analysis) work for the electrical power marketing Environmental Impact Statement. The Area Office is continuing to develop hydrographs for the operations of each of the Integrated Projects facilities for each alternative. Salt Lake City Area is completing the description of alternatives which will be included in the EIS. A Federal Register Notice will announce public information forums. The Area Office is currently working with a contractor to prepare a Power Resources Committee report for Glen Canyon Environmental Studies and the Glen Canyon Dam EIS. An Interim Operations Review Committee meeting was held March 20 in Page, Arizona. Topics of discussion were (1) evaluating ramping rates, (2) coordination of the biological studies on the Green, Gunnison, and Colorado Rivers, and (3) power scheduling concerns for third quarter. The next meeting is scheduled for April 20 in Montrose, Colorado.

Sacramento Area Office: The Area Office continued implementation of mitigation measures associated with construction of the California-Oregon Transmission Project including avoidance of disturbances of vernal pools and other wetlands. They also prepared a Statement of Work to procure contract services to prepare an Environmental Assessment for the proposed

interconnections between Western's Shasta-Keswick 230 kV transmission line and the Shasta Dam Area Public Utility District.

Resource Conservation and Recovery Act (RCRA).

Loveland Area Office: Loveland Area obtained guidance from EPA Region 8 on the management of buswork at the Flatiron Substation that is painted with lead-based paint. EPA offered the opinion that the material could be recycled as scrap metal. U.S. Public Health Service is in the process of inventorying Loveland Area's facilities for chemicals. This information will be used by the Area Safety Manager for Worker Right-to-Know requirements and by the Area Environmental Manager to complete the Hazardous Waste Management Plan and for compliance with SARA Title III.

Salt Lake City Area Office: The Hazardous Waste Management Plan was finalized distributed, and implemented in January. Supplies and materials were placed at appropriate waste accumulation locations for implementation of the procedures. Training on hazardous waste procedures were provided to all personnel which included on-site demonstrations of hazardous waste handling procedures and discussions of generator sources, waste accumulation limits, container use, document preparation and filing procedures, waste stream separation, inspections, emergency procedures, and definitions of hazardous and non-hazardous waste.

Phoenix Area Office: Annual hazardous waste reports for facilities in Arizona and Nevada were completed. Evaluations of hazardous waste handling procedures continued. Waste materials, including outdated materials and DDT aerosols, were packed for disposal. The Area Office drafted the appendix for the Hazardous Waste Management Plan and the Waste Minimization Plan.

Comprehensive Environmental Response, Compensation, and Liability Act.

Preliminary assessments are underway at various sites within each area of Western. Sacramento Area Office completed the 1991 Hazardous Waste Report required by EPA and the State of California. Loveland Area notified the State, local emergency planning and response commission, and the local emergency response officials of the presence of sulfuric acid at quantities above the threshold planning quantity at the Loveland Maintenance Facility. Guidance is being provided by Western Headquarters and written instructions will be provided to all Areas to instruct them on how to determine if they have sulfuric acid at the threshold planning quantity.

Toxic Substances Control Act.

Billings Area Office: Huron District shipped out 45 PCB articles for disposal under the Western Headquarters disposal contract with USPCI. The shipment took place in late March with no incidents reported during loading and transport.

Phoenix Area Office: The Area Office researched options for disposal of used oil contaminated with 2-49 ppm PCBs. A total of 43 drums of PCB contaminated oil were removed from Gila, Basic, Mead, and Hoover Substations. PCB contaminated transformers and bushings were removed from Davis Dam. The remaining bushings and electrical equipment were removed from Phoenix Substation as remediation work continues there.

Sacramento Area Office: The Area Office is continuing to work with Contra Costa Water District regarding leaking Western non-PCB transformers that Contra Costa maintains. They are reviewing specifications for new equipment to ensure compliance with TSCA regulations.

Loveland Area Office: Preliminary soil sample results indicate minor PCB contamination at Flatiron Substation. Additional sampling will be performed along and inside the pipeline. Western will coordinate with EPA regarding cleanup requirements once sampling is completed.

Safe Drinking Water Act.

Loveland Area Office: Two water wells at the Gering facility will be closed in accordance with the requirements provided by the State of Nebraska. The final sampling report was received from the contractor on the injection well at Cody. The report was forwarded to the State of Wyoming. The State recommends installing three monitoring wells. Western continues to pursue options for alternative approaches which may be more effective than the State recommendation.

DOE 5400.1.

The Western Quality Assurance Program Plan is in the process of being finalized incorporating peer review comments as well as Department recommendations. The final document will be ready for distribution to the Area Offices early third quarter. Area Office implementation of the plan is anticipated by the end of FY92.

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 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 Environmental Affairs is responsible for overseeing development and implementation of the Environmental Protection Implementation Plan for Western's Headquarters Office.

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 1991, seven facilities were audited by contracted auditors or Headquarters Division of Environmental Affairs staff. These functional appraisals were undertaken in accordance with DOE Order 5482.1B and included substations, maintenance facilities, and storage yards.

Formal audit reports are prepared for each functional appraisal to discuss the problems found and call attention to potential problems noted by the auditors. The 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.

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. 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 1991, 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 1991, 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.

- EPA's Generic Protocol for Environmental Compliance Audits
- Revised HRS Procedures
- NPDES Stormwater Discharge Rules
- Toxicity Characteristic Revision
- Western Audit Procedures Manual
- DOE Audit Procedures Manual
- Guidance for Preparation of Environmental Protection Implementation Plans
- Class V Injection Well Information and Guidance
- Draft Guidance for Facility Evaluation Program
- DOE Guidance Sheets for RCRA/CERCLA
- Land Disposal Restrictions Regulation Changes

4.1.5 Waste Minimization

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.

4.2 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 the 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.

4.3 ENVIRONMENTAL PLANNING ACTIVITIES AND RESEARCH

Table 3 lists the Environmental Assessments (EA) and Environmental Impact Statements (EIS) completed in calendar year 1991. Nine EAs and one EIS were completed in calendar year 1991.

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 National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) guidelines, the National Historic Preservation Act (NHPA), 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 1991

	<u>CLEARANCE DATE</u>
P-SMB Power Rate Adjustment (EA)	08-91
LAP Power Rate Adjustment (EA)	08-91
Limestone-Gering & Bayard-McGrew TL (EA)	02-91
Sidney-North Yuma Transmission Line (EA)	06-91
BCP Power Rate Increase (EA)	05-91
Parker-Gila Tap (EA)	09-91
1994 Marketing Plan (EA)	04-91
SLCAO/IP Single-Issue Rate Adjustment (EA)	11-91
Glen Canyon-Powell TL (EA)	11-91
Glen Canyon Dam Operations (EIS)	11-91

In 1991, 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.

In addition to its standard mitigation measures, Western frequently incorporates special mitigative techniques to address local environmental concerns. These may include special projects such as visual simulation studies, endangered or threatened plant and/or animal surveys, or special studies of other environmental concerns, such as floodplain, wetland, or sensitive land use features. A list of these studies which were completed or ongoing in 1991, is provided below.

- Endangered, Threatened, or Special Plant Surveys
- Pallid Sturgeon
- Colorado River Basin Endangered Fishes Recovery Program
- Black-footed Ferret Survey
- Black-shouldered Kite Survey

Western had approximately 26 environmental planning projects either started or underway during CY 1991. Most of these projects, listed in Table 4, are 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 1991**

<u>PROJECT NAME</u>	<u>DATE COMPLETE</u>
Fort Peck-Wolf Point TL	
P-SMB Power Rate Adjustment	08-91
Limestone-Gering & Bayard-McGrew TL	02-91
Carter Mtn-Thermopolis TL	
Sidney-North Yuma TL	06-91
Gering Building	
LAP Power Rate Adjustment	08-91
Fort Morgan Substation	
Flatiron-Erie TL	
Weld-Windsor TL	
BCP Power Rate Increase	05-91
Tucson-Apachee TL Rebuild	
Mead-Jackass Flats TL	
Adelanto-Lugo TL	
Parker-Gila Tap	09-91
McClellan Direct Interconnection	
1994 Marketing Plan	04-91
Roseville Substation No. 2	
SAO Operations Office Building	
Glen Canyon-Navajo TL	
Glen Canyon-Powell TL	11-91
Kayenta Capacitors	08-91
SLCAO/IP Allocation Criteria	
Glen Canyon Dam Operations	11-91
SLCAO/IP Single-Issue Rate Adjustment	11-91
SLCAO/IP Rate Adjustment	

TL = Transmission Line
Projects With No Completion Date Are Ongoing

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.

5.0 ENVIRONMENTAL MONITORING INFORMATION

5.1 GROUNDWATER MONITORING

Two Western facilities are required by state regulations to conduct quarterly groundwater monitoring. The groundwater monitoring wells at the facilities are to determine if degradation of groundwater is occurring.

5.1.1 Miles City Converter Station

Miles City Converter Station is a back-to-back, alternating-current to direct-current converter facility. It is located in Montana and has obtained a water pollution control permit from the State of Montana. The permit is required under the Administrative Rules of Montana 16.20.1017. The permit, number MGWPCS-0020, allows Western to discharge coolant water to an on-site evaporation pond. The coolant water discharge contains low concentrations of a corrosive inhibitor, an anti-foaming agent, and sodium hypochlorite.

Western was authorized by the State of Montana, to operate an evaporation pond at the Miles City Converter Station in June of 1984. Operation began on July 11, 1985, and the first sampling event occurred on November 14, 1985. As required by the state permit, there are

three wells located at the facility used to monitor groundwater degradation. The wells are sampled on a quarterly basis and samples are sent to an off-site laboratory for analysis. The results of the 1991 monitoring are included in Appendix A.

The permit requires quarterly analysis of the groundwater monitoring wells for the following parameters:

- Specific conductance (umhos/cm @ 25 C)
- ethylene glycol (mg/l)
- total phosphorus (mg/l)
- static water level (tenths of feet below datum)

5.1.2 Huron District Office

In 1986, an underground storage tank (UST) was found to be leaking during construction activity at the Huron District Office. The state of South Dakota was notified and three monitoring wells were placed to ascertain the extent of the contamination and the tank was removed. Laboratory analyses (see Appendix B) showed that groundwater contained benzene and total hydrocarbons but that they were within the parameters permitted by the State. The site of the tank was then paved and made part of the District Office's parking area. Quarterly monitoring conducted in 1990 showed an irregular decline in the parameters being measured. The request for this monitoring was based on 1989 tests, using a different analysis method which indicated that benzene and total hydrocarbons (THC) were not within recently revised regulations. The South Dakota Department of Water and Natural Resources (DWNR) notified the Huron District Office on December 10, 1990, of this deficiency.

Western is investigating the difference between the testing procedures used during the initial testing and those used during the retest. Monitoring results of monitoring well No. 1 showed declines since the tank's removal in 1986, except for the results of the retest. Based on the results of that investigation, Western will respond to the DWNR report and will comply with the requirements of the DWNR. Table 5 gives the test results for monitoring well No. 1. The results indicate contamination levels in the groundwater exceed the state groundwater quality standards of .1 ppm THC and 5 ppb benzene.

DWNR recommended installation of an additional well to further define the plume contamination. The additional well was installed and sampled in December with laboratory results showing no contamination in that well and decreased contamination in monitoring well No. 1.

TABLE 5

RESULTS FROM MONITORING WELL No. 1
AT THE HURON DISTRICT OFFICE

<u>DATE</u>	<u>LAB</u>	<u>THC</u>	<u>BENZENE</u>	<u>TOLUENE</u>	<u>XYLENE</u>
10/86	TCT	64.0	13.0	15.0	14.0
07/89	SRM	165.0	11.9	20.2	18.3
01/90	TCT	37.0	4.7	0.39	2.3
04/90	TCT	39.0	4.1	1.8	2.8
07/90	TCT	30.0	4.9	0.58	1.7
09/90	TCT	58.0	3.0	1.2	2.2
06/91	GEO	27.0	2.9	1.9	4.2
12/91	GEO	9.1	0.2	0.04	0.2

NOTE: All values are in ppm.

5.2 HAZARDOUS MATERIAL SPILL INFORMATION

Cleanup was completed in late 1991 for two spills resulting from ruptured capacitors at the Liberty Substation in 1990. The first rupture was on July 31, 1990, with a release of approximately 60 to 100 pounds of PCBs. The second rupture was on October 1, 1990, with a release of 10 to 20 pounds of PCBs. Following these incidents, the Phoenix Office failed to notify the National Response Center in accordance with TSCA, CERCLA, and DOE Order 5500.2A. Final reports were submitted to all appropriate offices in November 1991.

6.0 GROUNDWATER PROTECTION PROGRAM

Due to the nature of Western's operations, the threat of groundwater contamination is minimal, thus a groundwater protection management program that would apply to all of Western's facilities is not necessary. The groundwater protection requirements are incorporated into other programs which inherently involve groundwater protection; such as underground storage tanks, underground injection control, and solid waste disposal. Compliance with Federal, State and local regulations is an integral part of the program.

One of the findings during the DOE audit of the Phoenix Area Office

in 1990 was the need for a Facility Evaluation Program. As a result, a Facility Evaluation Program was developed and implemented by Western in 1991. By the end of FY 91, over 200 facilities have been evaluated. This program is aimed at evaluating all Western facilities for sources of and suspected releases of oil, hazardous substances, pollutants, or contaminants into the environment.

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) is currently being developed to outline the policies, objectives, concepts, systems, and procedures for Western as required by DOE Orders 5400.1 and 5700.6C. The QAPP was drafted in 1991 and full implementation of the plan will be accomplished in 1992. The implementation of a Quality Assurance Program Plan 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 5400.1
DOE Order 5482.1B
DOE Order 5484.1
Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)
Executive Order 12088
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
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 5480.1

APPENDIX A

**Miles City Converter Station
Groundwater Monitoring Results**

Chen-Northern, Inc.

A member of the **HIH** group of companies

600 SOUTH 25TH STREET
P. O. BOX 30615
BILLINGS, MT 59107
(406) 248-9161
FAX (406) 248-9282

TECHNICAL REPORT



REPORT TO: U. S. DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
P O BOX 145
FORT PECK, MT 59223

DATE: July 8, 1991
JOB NUMBER: 85-945
SHEET: 1 OF 1
INVOICE NO.: 115682

REPORT OF: Groundwater Analysis - Miles City Converter

Sample Identification:

On June 3, 1990, these water samples were received in our laboratory for analysis. Tests were conducted in accordance with the U.S. Environmental Protection Agency Manual EPA 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes." The results of the analysis are shown as follows.

A < sign indicates less than the reported value was present in the sample.

Lab No.:	116074	116075	116076
Sample Description:	North Well	East Well	West Well
Date Sampled:	5/30/91	5/30/91	5/30/91
Time Sampled:	None Given	None Given	None Given
Collected by:	Client	Client	Client

				Date Analyzed:
INORGANICS				
Electrical Conductivity, umhos/cm	14,400	15,300	17,900	6/07/91
NUTRIENTS				
Total Phosphorous, as P, mg/l	0.04	0.19	0.03	6/25/91
Ethylene Glycol, mg/l	<20	<20	<20	--
Total Well Depth from Top of Casing, feet	58.4	33.6	50.1	--
Static Water Level from Top of Casing, feet	23.3	23.7	24.3	--

rl

Reviewed by

Kathleen A. Smith

Client Name: U. S. DEPT. OF ENERGY
WESTERN AREA POWER ADMINISTRATION
Project No.: 85-945
Project Name: Miles City Converter Station

April 18, 1991
Sheet 2 of 3

Laboratory No.: 113671
Sample Name: NORTH WELL
Sample Date: 03/22/91
Collected by: CLIENT
Time Sampled: None Given

PARAMETER	AVERAGE VALUE	DATE ANALYZED
Electrical Conductivity	13000 umhos/cm	04/03/91
Total Phosphorous as P	0.29 mg/l	04/12/91
Ethylene Glycol	<20 mg/l	None Given
Total Well Depth	58.4 feet	--
Static Water Level	23.9 feet	--

Laboratory No.: 113672
Sample Name: EAST WELL
Sample Date: 03/22/91
Collected by: CLIENT
Time Sampled: None Given

PARAMETER	AVERAGE VALUE	DATE ANALYZED
Electrical Conductivity	15700 umhos/cm	04/03/91
Total Phosphorous as P	0.24 mg/l	04/12/91
Ethylene Glycol	<20 mg/l	None Given
Total Well Depth	33.6 feet	--
Static Water Level	24.0 feet	--

Client Name: U. S. DEPT. OF ENERGY
WESTERN AREA POWER ADMINISTRATION
Project No.: 85-945
Project Name: Miles City Converter Station

April 18, 1991
Sheet 3 of 3

Laboratory No.: 113673
Sample Name: WEST WELL
Sample Date: 03/22/91
Collected by: CLIENT
Time Sampled: None Given

PARAMETER	AVERAGE VALUE	DATE ANALYZED
Electrical Conductivity	18300 umhos/cm	04/03/91
Total Phosphorous as P	0.09 mg/l	04/12/91
Ethylene Glycol	<20 mg/l	None Given
Total Well Depth	50.0 feet	--
Static Water Level	24.7 feet	--

Client Name: U. S. DEPT. OF ENERGY
WESTERN AREA POWER ADMIN.
Project No.: 85-945

January 3, 1991
Sheet 2 of 2

Laboratory No.: 122934
Sample Name: EAST WELL
Sample Date: 12/10/91
Collected by: CLIENT
Time Sampled: None Given

PARAMETER	MEASURED VALUE		DATE ANALYZED
INORGANICS			
Electrical Conductivity	15,600	umhos/cm	12/16/91
NUTRIENTS			
Phosphorous Total	0.25	mg/l	12/24/91
Ethylene Glycol	<10	mg/l	12/23/91
Total Well Depth from Top of Casing	33.6	feet	
Static Water Level from Top of Casing	23.5	feet	

Laboratory No.: 122935
Sample Name: WEST WELL
Sample Date: 12/10/91
Collected by: CLIENT
Time Sampled: None Given

PARAMETER	MEASURED VALUE		DATE ANALYZED
INORGANICS			
Electrical Conductivity	16,500	umhos/cm	12/16/91
NUTRIENTS			
Phosphorous Total	0.13	mg/l	12/24/91
Ethylene Glycol	<10	mg/l	12/23/91
Total Well Depth from Top of Casing	50.1	feet	
Static Water Level from Top of Casing	23.9	feet	

Client Name: U. S. DEPT. OF ENERGY - WESTERN AREA POWER ADMIN.
Project No.: 85-945
Project Name: Groundwater Analysis - Miles City Converter

October 21, 1991
Sheet 2 of 4

Lab No.: 120235
Sample Name: North Well
Sample Date: 09/25/91
Collected by: Client
Time Sampled: None Given

PARAMETER	MEASURED VALUE		DATE ANALYZED
INORGANICS			
Electrical Conductivity	12,300	umhos/cm	10/11/91
NUTRIENTS			
Phosphorous Total	1.30	mg/l	10/17/91
Ethylene Glycol	<10	mg/l	10/09/91
Total Well Depth From Top of Casing	58.5	Feet	
Static Water Level From Top of Casing	22.9	Feet	

Client Name: U. S. DEPT. OF ENERGY WESTERN AREA POWER ADMIN.
Project No.: 85-945
Project Name: Groundwater Analysis - Miles City Converter

October 22, 1991
Sheet 3 of 4

Lab No.: 120236
Sample Name: East Well
Sample Date: 09/25/91
Collected by: Client
Time Sampled: None Given

PARAMETER	MEASURED VALUE	DATE ANALYZED
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INORGANICS

Electrical Conductivity	15,900 umhos/cm	10/11/91
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NUTRIENTS

Phosphorous Total	0.24 mg/l	10/17/91
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Ethylene Glycol	<10 mg/l	10/09/91
-----------------	----------	----------

Total Well Depth From Top of Casing	33.6 Feet	
-------------------------------------	-----------	--

Static Water Level From Top of Casing	23.7 Feet	
---------------------------------------	-----------	--

Client Name: U. S. DEPT. OF ENERGY WESTERN AREA POWER ADMIN.
Project No.: 85-945
Project Name: Groundwater Analysis - Miles City Converter

October 22, 1991
Sheet 4 of 4

Lab No.: 120237
Sample Name: West Well
Sample Date: 09/25/91
Collected by: Client
Time Sampled: None Given

PARAMETER	MEASURED VALUE	DATE ANALYZED
INORGANICS		
Electrical Conductivity	15,700 umhos/cm	10/11/91
NUTRIENTS		
Phosphorous Total	0.15 mg/l	10/17/91
Ethylene Glycol	<10 mg/l	10/09/91
Total Well Depth From Top of Casing	50.1 Feet	
Static Water Level From Top of Casing	23.7 Feet	

APPENDIX B

**Huron District Office
Site Map**

SITE SKETCH
WAPA
HURON, SD



Third Street NE

Property Line and
edge of old shed

#3

#9

#5

#1

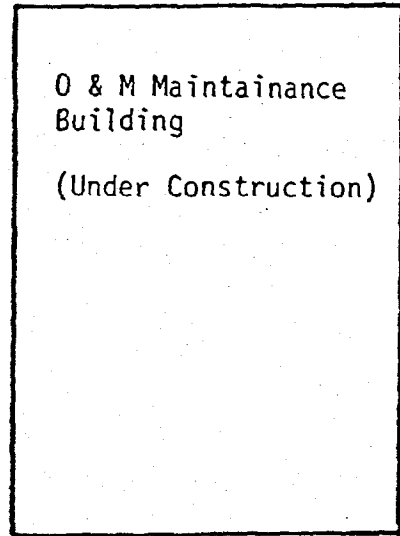
#6

#2



Approximate
location of old
storage tank

#7



O & M Maintenance
Building
(Under Construction)

Iowa Ave. NE

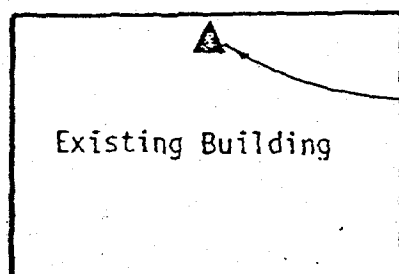
curb

curb

#4

#8

- ⊕ Soil Boring Locations
- ⊕ Soil Boring and Monitoring Well Locations



Existing Building

T.B.M.: Floor of
existing bldg.
Elev. 1274.60'

APPENDIX C

**Standard Mitigative Measures for
Construction, Operation, and Maintenance
of Transmission Lines**

Standard mitigative practices employed by the Western Area Power Administration to minimize impacts of transmission line construction and maintenance are described below.

Visual Resources

- Conductors may have a non-reflective finish to avoid sheen and to provide blending of the conductors into any given setting through which the line must pass.
- Western follows design practices identified in the "Environmental Criteria for Electric Transmission Systems" prepared by the U.S. Department of Agriculture and the U.S. Department of Interior and "National Forest Landscape Management", Volume 2, Chapter 2, "Utilities" prepared by the U.S. Department of Agriculture.

Surface Water Protection

- Structure sites and other disturbed areas are located at least 300 feet from rivers, streams (including ephemeral streams), ponds, lakes, and reservoirs, where practical.
- New access ways are located at least 300 feet from rivers, ponds, lakes, and reservoirs, where practical.
- At crossing of perennial streams by new access ways, culverts of adequate size to accommodate the estimated peak flow of the stream are installed.
- Waste waters from concrete batching, or other construction operations, shall not enter streams, watercourses, or other surface waters without the use of turbidity control methods.
- Dewatering work for structure foundations or earthwork operations adjacent to streams or watercourses are conducted in a manner to prevent muddy water and eroded materials from entering the streams.
- Excavated material or other construction materials are not stockpiled near watercourse perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual watercourse itself.

Vegetation Protection

- Structures are carefully located to span narrow bands of sensitive vegetation conditions, including wetlands.
- Access ways are located to avoid sensitive vegetation conditions, including wetlands, or, if they are linear, to cross them at the least sensitive feasible point.
- Removal of vegetation is minimized to avoid creating a swath along the right-of-way.
- Structures are 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

Wildlife Protection

- Construction activities are timed to reduce impacts to wildlife during periods when human disturbance may unduly stress populations. These include critical winter or summer periods, birthing periods, or other periods of high sensitivity.
- Western's transmission line structures for 69-kV and higher, are designed to minimize the potential for electrocuting raptors or large birds.

Dust Abatement

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