MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline

Environmental Impact Statement
Volume One: Draft

April 1980

Department of Interior
Bureau of Land Management

NOTICE

This draft environmental statement should be retained to be used in conjunction with the final environmental statement. The final statement will incorporate this document by reference and include the modifications and corrections which should be made to the draft as a result of public comment. The final statement will also include a record of public comments on this draft and the responses to those comments.

IN REPLY REFER TO

1792 (922)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
NEW MEXICO STATE OFFICE
P.O. BOX 1449
SANTA FE, NEW MEXICO 87501

Enclosed for your review and comment is the Draft Environmental Impact Statement (DEIS) for MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline. The document was prepared by the BLM, New Mexico State Office, Non-Bureau Energy Initiatives (NBEI) Team with assistance from BLM State Office Coordinators in Colorado, Utah, and Wyoming.

This statement is based on information supplied by many federal, state, and local agencies and interested private organizations and individuals. The purpose of the statement is to indicate the probable environmental impacts of the proposed action and alternatives and to ensure that these factors are considered along with economic, technical, and other considerations in the decision-making process.

Chapter 1 (Proposed Action and Alternatives) outlines special construction practices which would be implemented to help minimize adverse impacts. The impact analysis has been based on the assumption that these special construction practices would be implemented. The document was prepared in compliance with the Final CEQ Regulations. Consequently, only those resources for which significant impacts were identified have been detailed. Criteria for determining the significance of impacts for all resources are presented in Chapter 3. These determinations were based on detailed impact analysis and an intensive scoping process.

I would appreciate receiving your comments on the environmental impacts of the proposed action. The comment period will run for 45 days after the Notice of Availability is printed in the Federal Register by the Environmental Protection Agency. Comments received after the 45 day review period will be considered in the subsequent decision process even though they may be too late for inclusion in the Final Environmental Impact Statement.

Public hearings will be scheduled for Santa Fe, N.M., Grand Junction, Colorado, Vernal, Utah, and Rock Springs, Wyoming and will be announced through the Notice of Availability and the media.

Your comments should be sent to:

State Director (922)
Bureau of Land Management
P.O. Box 1449
Santa Fe, New Mexico 87501

Sincerely yours,

Arthur W. Zimmerman

State Director, New Mexico

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

IN COOPERATION WITH
U.S. DEPARTMENT OF AGRICULTURE
ROCKY MOUNTAIN REGION AND
INTERMOUNTAIN REGION OF THE
FOREST SERVICE

DRAFT ENVIRONMENTAL IMPACT STATEMENT ON MAPCO'S ROCKY MOUNTAIN LIQUID HYDROCARBONS PIPELINE

MAPCO INC., (the applicant), formerly known as Mid-America Pipeline Company, proposes to construct 1172 miles of common carrier pipeline and related facilities from its Hobbs Station in Gaines County, Texas, through New Mexico, Colorado, and Utah to the Rock Springs, Wyoming area to transport liquid hydrocarbons. The proposed pipeline would connect various gas processing plants in New Mexico, Colorado, Utah, and Wyoming to the distribution system at Hobbs station (through the applicant's pipeline). From Hobbs station the liquids can be transported either through the applicant's system to the Upper Midwest area of the United States or to connections in the Gulf Coast Region. The goal is to collect and transport, through a system of gathering lines and main pipeline, up to 65,000 barrels per day (BPD) of mixed stream liquid hydrocarbons.

Alternatives Analyzed:
a. Douglas Pass, CO
b. Little Mountain, UT and WY
c. Pine Mountain, UT and WY
d. No Action
e. Delay of Project

Type of Action (X) Administrative ( ) Legislative

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Date Filed with EPA: Draft:

Final:

Dates of Comment and Review Period:

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STATE DIRECTOR, NEW MEXICO
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TABLE OF CONTENTS

	Page
SUMMARY	ix
CHAPTER ONE - PROPOSED ACTION AND ALTERNATIVES	
Introduction	1-1
Authorizing Actions	1-1
Federal	1-1
State	1-3
Other Jurisdictions	1-3
Purpose and Need	1-3
Level of Analysis	1-7
Proposed Action	1-7
Special Siting Considerations	1-7
Project Components	1-7
Construction Methods	1-15
Pump Stations	1-22
Special Methods	1-24
Construction Workforce and Schedule	1-24
Pipelines	1-24
Pump Stations	1-24
Resource Considerations	1-24
All Lands	1-24
Federal and State Lands	1-27
Site Specific	1-27
Compliance Check and Monitoring	1-28
Emergency Procedures	1-28
Organization Response	1-28
Ruptures	1-29
Alternatives	1-30
Identification of Alternatives	1-30
Screening	1-32
Route Alternatives Selected for Detailed Analysis	1-37
Locations	1-37
Special Construction Practices for Alternative Routes	1-37

	Page
Other Alternatives Selected for Detailed Analysis	1-37
Summary	1-37
Mitigation Not Otherwise Included in the Proposed Action	1-42
Paleontology	1-42
Soils	1-42
Wildlife	1-42
Visual Resources	1-42
CHAPTER TWO - AFFECTED ENVIRONMENT	
Paleontology	2-1
Wildlife	2-1
Threatened or Endangered Wildlife and Plant Species	2-1
Cultural Resources	2-3
Visual Resources	2-11
Wilderness Resources	2-15
Prime and Unique Farmlands	2-15
Land Use Controls and Constraints	2-15
Social and Economic Conditions	2-20
Alternatives	2-21
All Alternatives	2-21
Douglas Pass Alternative	2-21
Little Mountain Alternative	2-21
Pine Mountain Alternative	2-21
CHAPTER THREE - ENVIRONMENTAL CONSEQUENCES	
Criteria by which Significant Impacts were Determined	3-1
Proposed Action	3-5
Impact Assessment	3-5
Paleontology	3-5
100-Year Floodplains	3-5
Wildlife	3-8
Threatened and Endangered Wildlife and Plant Species	3-8
Cultural Resources	3-8
Visual Resources	3-9
Wilderness Resources	3-11
Prime and Unique Farmlands	3-13
Land Use Controls and Constraints	3-13
Social and Economic Conditions	3-13
Energy Use	3-14

	Page
Unavoidable Adverse Impacts	3-15
Paleontology	3-15
Cultural Resources	3-15
Visual Resources	3-15
Relationship Between Local Short-Term Use and Long-Term Productivity	3-15
Cultural Resources	3-17
Social and Economic Conditions	3-17
Energy Use	3-17
Irreversible and Irretrievable Commitment of Resources	3-17
Paleontology	3-17
Cultural Resources	3-17
Visual Resources	3-17
Alternatives	3-17
Douglas Pass	3-17
Little Mountain	3-20
Pine Mountain	3-20
No Action	3-20
Delay of Project	3-20
Information for the Comparison of Alternatives	3-21
Preferred Alternative	3-21
CHAPTER FOUR - CONSULTATION AND COORDINATION	
The Scoping Process	4-1
Scoping Meetings	4-1
Tri-State Alternatives	4-4
Summary	4-4
AGENCIES CONSULTED	4-7
LIST OF PREPARERS AND CONTRIBUTORS	4-11
GLOSSARY	G-1
REFERENCES	R-1
INDEX	I-1
APPENDIX A Maps 1-18 of MAPCO's Proposed Action and Alternatives for Rocky Mountain Liquid Hydrocarbons Pipeline.	

LIST OF TABLES

		Page
Table 1-1	Description of Existing and Proposed Gas Processing Plants	1-5
Table 1-2	Ownership of Lands Affected by Proposed Action	1-8
Table 1-3	Status of Proposed ROW with Respect to Other Utilities	1-9
Table 1-4	Location of Pump Stations	1-11
Table 1-5	Pump Stations: Communication and Electrical Service	1-13
Table 1-6	Major River Crossings for Proposed Action	1-19
Table 1-7	Pump Station Turbine and Horsepower Requirements	1-23
Table 1-8	Crucial Wildlife Use Areas and Periods to Avoid Construction of Proposed Action	1-25
Table 1-9	Identified Alternatives to the Proposed Action	1-31
Table 1-10	Summary of Screening Decisions for Alternatives	1-33
Table 1-11	Crucial Wildlife Use Areas and Periods to Avoid Construction for Alternatives	1-40
Table 1-12	Summary of Significant Impacts for Proposed Action and Alternatives	1-41
Table 2-1	Formations and Number of Miles Along the Proposed Action Having Paleontological Resources	2-2
Table 2-2	Federally Listed Threatened and Endangered Species For Proposed Action and Alternatives	2-4
Table 2-3	Legislatively State-Listed Threatened or Endangered Species Possibly Occurring Along or Near the Proposed Action	2-5
Table 2-4	Sites in or Eligible for Inclusion in the National Register Within Ten Miles of Proposed Action	2-6

		Page
Table 2-5	Distribution of VRM Classes by Miles or Location for Proposed Action	2-16
Table 2-6	Wilderness Areas for Intensive Inventory Within Two Miles of the Proposed Action	2-17
Table 2-7	Status of BLM Management Framework Plans (MFP) for Planning Units in Affected Districts	2-18
Table 2-8	Formations and Number of Miles along the Alternative Routes Having Potential Paleontological Resources	2-22
Table 2-9	Cultural Sites within Ten Miles of Alternatives	2-23
Table 2-10	Distribution of VRM Classes by Miles or Location for Alternatives	2-25
Table 3-1	Environmental Resources and Impact Topics Analyzed	3-2
Table 3-2	Locations of Formations Along the Proposed Action that contain Potentially Significant Fossils	3-6
Table 3-3	Summary of Significant Visual Resource Impacts for Proposed Action	3-10
Table 3-4	Overall Heat Balance	3-16
Table 3-5	Locations of Formations Along the Alternatives that contain Potentially Significant Fossils	3-18
Table 3-6	Summary of Significant Visual Resource Impacts for Alternatives	3-19
Table 3-7	Summary of Comparative Information for Proposed Action and Alternatives	3-22
Table 3-8	Summary of Physical Information for Comparison of Proposed Action and Alternatives	3-23
Table 3-9	Summary of Biological Information for Comparison of Proposed Action and Alternatives	3-24
Table 3-10	Summary of Human Use Information for Comparison of Proposed Action and Alternatives	3-25
Table 4-1	Public Scoping Meetings	4-2

LIST OF FIGURES

		Page
Figure 1-1	Typical Pump Station	1-12
Figure 1-2	Above-Ground Valves	1-14
Figure 1-3	Construction Right-of-Way Use	1-16
Figure 1-4	Typical Construction Activities	1-17
Figure 1-5	Plan and Profile of Typical River Crossing	1-21
Figure 2-1	Visual Resource Management Classes Along the Proposed Mainline Route	2-12
Figure 2-2	Visual Resource Management Classes Along the Proposed Gathering Lines	2-14
Figure 2-3	Visual Resource Management Classes Along the Alternative Routes	2-24
Figure 3-1	Examples of Simulated Visual Impacts	3-12

LIST OF MAPS

Map 1-1	General Location of Proposed Action	1-4
Map 1-2	Natural Gas Liquids Distribution System	1-6
Map 1-3	Alternative Routes Considered Under Screening Criteria Three (Near Arches National Park)	1-34
Map 1-4	Alternative Routes Considered Under Screening Criteria Three (Tri-State Area)	1-35
Map 1-5	General Location of Proposed Action and Alternative Routes	1-38
Map 1-6	Detailed Location of Alternative Routes	1-39

SUMMARY

MAPCO, INC. (the applicant), formerly known as Mid-America Pipline Company, proposes to construct 1172 miles of common carrier pipeline and related facilities from its Hobbs Station in Gaines County, Texas through New Mexico, Colorado and Utah to the Rocky Mountain Overthrust Area of Wyoming to transport liquid hydrocarbons. The proposed pipeline would connect various gas processing plants in New Mexico, Colorado, Utah and Wyoming to the existing distribution system at Hobbs Station. From Hobbs Station the liquids could be transported either through MAPCO's system to the Upper Midwest area of the United States or through pipeline connections to the Gulf Coast.

In response to MAPCO's right-of-way grant application to the Bureau of Land Management (BLM), New Mexico State Office (NMSO) (Application Number NM36230, filed April 18, 1979), the NMSO assumed the function of lead agency. The application is being processed under the authority of Section 28 of the Mineral Leasing Act of 1920, as amended (30 USC 185). This Environmental Impact Statement (EIS) was prepared by the BLM NMSO Non-Bureau Energy Initiatives (NBEI) team under an Interagency Cooperative Agreement (Number CA-NMSO-128) with the U.S. Department of Agriculture (USDA), Forest Service, Rocky Mountain and Intermountain Regions.

The purpose of the proposed action is to transport up to 65,000 barrels per day of mixed stream hydrocarbons. The mixed stream would consist of butane, ethane, iso-butane, natural gasoline and propane. Ethane is used in the manufacture of polyethylene materials. Propane is used for space heating, cooling, fuel and peak industrial loads. The butanes and natural gasoline are used by refineries for the manufacture of motor fuels. Characteristically, the hydrocarbons are gaseous under atmospheric conditions. In storage and in the pipeline these products are handled and transported under pressure (ranging from 350 to 1835 pounds per square inch) in a liquid state.

In compliance with the National Environmental Policy Act (40 CFR, Part 1501.7), a public scoping process was conducted in the early stages of preparing this EIS. The scoping process consisted of 18 public meetings and numerous contacts with affected agencies. During this process, the scope of issues to be analyzed and significant issues related to the proposed action were identified.

Eighteen alternatives were identified and considered. A screening procedure was used to select reasonable alternatives to the proposed action. Of those considered, 5 alternatives were selected for detailed analysis.

The 5 alternatives consisted of the "no action" alternative, (defined as BLM denial of a permit to the applicant for construction and operation of the proposed action) and the "delay of project" alternative (defined as BLM's not issuing to MAPCO the grant to construct the proposed action in 1980). In addition to these, 3 route segment alternatives were selected for detailed analysis.

The Douglas Pass (CO) alternative (72 miles) was selected as an optional route segment to the 74-mile Baxter Pass (CO) segment of the proposed action. Two route segment alternatives were selected for the proposed segment reaching from northeastern Utah into southern Wyoming. The proposed action segment, called East of Little Mountain (63 miles), begins at Diamond Mountain (UT). The route would then traverse Rye Grass and Jesse Ewing canyons into Clay Basin (UT) and on to East of Little Mountain (at Highway 373, WY). The Little Mountain alternative (56 miles) departs the proposed action at Diamond Mountain, proceeds to Little Hole (UT), where it turns north to and over Little Mountain (WY), and then rejoins the proposed action. The Pine Mountain alternative (68 miles) follows the proposed action through Rye Grass and Jesse Ewing canyons (UT) where it departs the proposed action in a northeasterly direction to and over Pine Mountain (WY).

Construction, operation and maintenance of the following project components were considered in impact analysis:

1. electrically operated injection pumps in various gas processing plants

2. main pipeline

3. gathering lines and spurs to processing plants

4. pump stations

   o electric service
   o telephone line
   o one microwave tower

5. above-ground gate valves and check valves

6. above-ground scraper traps with check valves

7. cathodic protection system

8. right-of-way markers

The EIS consists of 4 chapters, a glossary of terms, references and an index. Chapter One describes Purpose and Need, Authorizing Actions and the Proposed Action. The process of identifying and screening the 18 alternatives for selection for detailed analysis is also described.

A fundamental approach to this EIS is reflected in Chapter One (Proposed Action and Alternatives). Numerous construction methods and resource considerations are incorporated as a part of the proposal. Implementation of these procedures for construction, operation and maintenance was assumed for the purpose of impact analysis. Inclusion of these applicant-proposed considerations and practices, in part, accounts for the relatively low number and magnitude of significant environmental impacts, which are summarized at the end of Chapter One.

As Chapter Two indicates, detailed impact analyses were conducted for the following resources and topics:

Climate
Air Quality
Geology (geologic hazards)
Mineral Resources
Paleontology
Soils
Water Resources (including 100-year Floodplains)
Vegetation (including Threatened and Endangered Species)
Wildlife (including Threatened and Endangered Species)
Cultural Resources
Visual Resources
Noise
Land Uses
  Agriculture (including Prime and Unique Farmlands)
  Forests
  Livestock Grazing
  Recreation
  Wilderness
Land Use Controls and Constraints
Transportation Networks
Social and Economic Conditions

Information on resource topics for which significant impacts were either determined to be likely or are unknown are included in this document. They are Paleontology, Wildlife, Threatened and Endangered Species, Cultural Resources, Visual Resources and Social and Economic Conditions.

For each potentially affected resource, Chapter Three presents analytic criteria by which the determination of significant impacts was made. Significant impacts are described for Visual Resources in 8 locations. Five other resources are described as having the potential to be significantly impacted (Paleontology, Wildlife, Threatened and Endangered Species, Cultural Resources and Social and Economic Conditions). In compliance with various requirements negative declarations (no significant impacts) are made including, 100-year Floodplains, Prime and Unique Farmlands, Land Use Controls and Constraints and Wilderness Resources. An energy use analysis is also provided.

Generally, no significant differences were found between the alternatives, based on impact analysis. Slight differences in site specific requirements for mitigation or recovery potential were identified. Based on these differences, the BLM has selected the Baxter Pass and Pine Mountain Alternatives as its preferred alternatives.

Chapter Four summarizes the results of the scoping process. Lists of preparers, contributers and agencies consulted are also presented.

CHAPTER ONE
PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

MAPCO INC., (the applicant), formerly known as Mid-America Pipeline Company, proposes to construct 1172 miles of common carrier pipeline and related facilities from its Hobbs Station in Gaines County, Texas, through New Mexico, Colorado, and Utah to the Rock Springs, Wyoming area to transport liquid hydrocarbons. The proposed pipeline would connect various gas processing plants in New Mexico, Colorado, Utah, and Wyoming to the distribution system at Hobbs Station through the applicant's pipeline. From Hobbs Station the liquids can be transported either through the applicant's system to the Upper Midwest area of the United States or to pipeline connections in the Gulf Coast Region.

The goal of the proposal is to collect and transport, through a system of gathering lines and main pipeline, up to 65,000 barrels per day (BPD) of mixed stream liquid hydrocarbons. The life of the project would be 30 years.

On April 18, 1979, under Application Number NM 36230, MAPCO applied to the Bureau of Land Management (BLM), New Mexico State Office (NMSO) for a right-of-way (ROW) grant. The NMSO is preparing this Environmental Impact Statement (EIS) in accordance with the provisions of the National Environmental Policy Act (NEPA) and the regulations of the Council on Environmental Quality (CEQ). The State Director of New Mexico has received a delegation of authority to issue all initial grants, permits and amendments thereto across public and appropriate federal lands for this project in the states of New Mexico, Colorado, Utah and Wyoming (Federal Register, Vol. 44, No. 120, Wednesday, June 20, 1979). No federal lands are affected in Texas.

AUTHORIZING ACTIONS

Federal

Bureau of Land Management (BLM)

The BLM is responsible for the authorization of the actions listed below and for the preparation of environmental assessments, where necessary. The BLM is also responsible for coordinating the preparation of ROW stipulations by federal agencies and for ensuring that these stipulations are consistent. These actions are:

1. Issuance of a grant of ROW for construction and operation of main and gathering pipelines and associated ancillary facilities (pump stations, power and telephone lines, cathodic protection facilities, and one microwave tower) across 491[a] miles of federal land from Hobbs Station near Seminole, Texas to southwestern Wyoming. The ROW would be issued under the authority of Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185) and in accordance with the regulations in 43 CFR 2880, Oil and Gas Pipelines. The ROW grant would be issued by the BLM's NMSO.

2. Issuance of approximately 500 temporary use permits for temporary work and storage sites at major drainage crossings, highway and railroad crossings, and other utility crossings. These permits would be issued from the appropriate BLM District office among the following: Roswell, Albuquerque, Montrose, Moab, Grand Junction, Craig, Vernal, Rock Springs, and Rawlins.

3. Issuance of an undetermined number of Noncompetitive (Negotiated) Sales of Mineral

[a] All mileages have been rounded to the nearest whole mile.

Material (commercial fill, sand and gravel, and other surfacing or construction material of common variety) under 43 CFR 3611, Noncompetitive Sales. These would be issued by the appropriate BLM District Office.

Bureau of Indian Affairs (BIA)

The BIA is responsible for the issuance of any grants of ROW for construction and operation of a pipeline through the following Indian tribal lands:

- Santa Ana Pueblo, 13 miles
- Zia Pueblo, 15 miles
- Southern Ute Indian Reservation, 5 miles

The BIA exercises the Secretary of the Interior's trust responsibility for review and approval of agreements between the Indian tribes and private companies concerning development on Indian land. Secretarial approval of actions on Indian lands, in his trust capacity, are independent of ROW approval on public lands. A grant of the proposed ROW and approval of any of the related developments discussed in this EIS does not commit the Secretary of the Interior to any decision regarding Indian lands.

The rights-of-way would be approved subject to standard requirements imposed by the terms and conditions of the ROW grant including duration of the grant, ROW widths, fees or costs, and bonding to secure obligations. Rights-of-way across Tribal Trust Lands administered by the BIA as well as Indian Tribal Fee Lands would be negotiated with the respective Indian tribes. Rights-of-way across individual trust (allotted) lands administered by the BIA would be negotiated with the individual Indian owners.

Authority for issuance of these rights-of-way would rest with the Superintendent in charge of the reservation on which the lands involved are situated in accordance with 25 CFR 161.25, Rights-of-Way Over Indian Lands.

U.S. Army Corps of Engineers (COE)

The COE is responsible for the issuance of two permits (Army Section 10) for the crossing of the Green (at Davis Bottom) and the Colorado rivers. Other river crossings meet the conditions of a nationwide Section 404 permit. The COE is also responsible for consulting with the U.S. Fish & Wildlife Service to ensure consideration of wildlife resources in the permitting process.

U.S. Fish and Wildlife Service (FWS)

The FWS is responsible for providing consultation concerning the possible effects of the proposed action on Threatened or Endangered Species as required by Section 7 of the Endangered Species Act of 1973, as amended. Consultation will be initiated and conducted in accordance with 50 CFR 402, Interagency Cooperation, Endangered Species Act of 1973.

U.S. Forest Service (FS)

Responsibility for crossing FS lands (San Juan and Ashley National Forests) is provided in Cooperative Agreement Number CA-NMSO-128 on file at BLM, NMSO.

This Interagency Cooperative Agreement provides for procedures and assigns responsibilities for the processing, granting, and administration of the right-of-way and related facility permits necessary for the proposed action. This agreement assigns the State Director, New Mexico, Bureau of Land Management, US Department of the Interior, as the Lead Agency and Forest Service, US Department of Agriculture, Rocky Mountain Region and the Intermountain Region as Cooperating Agencies.

Department of Transportation (DOT)

The DOT is responsible for ensuring that construction, operation, and maintenance of the proposed action would be in conformance with 49 CFR 195, Transportation of Liquids by Pipeline.

Advisory Council on Historic Preservation (ACHP)

Section 106 of the Historic Preservation Act of 1966, as amended requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which affects cultural resources in areas listed or eligible for inclusion in the National Register of Historic Places in order to protect those resources. Executive Order 11593 (Protection and Enhancement of the Cultural Environment) mandates that all Executive Branch agencies, bureaus, and offices (1) com-

pile an inventory of the cultural resources for which they are trustee, (2) nominate all eligible government properties to the National Register of Historic Places, (3) preserve and protect their cultural resources, and (4) ensure that agency activities contribute to the preservation and protection of non-federally owned cultural resources.

The Advisory Council is responsible for implementing regulations through the process outlined in 36 CFR 800 (The Protection of Historic and Cultural Properties). The process of developing a programmatic Memorandum of Agreement to accomplish these requirements has begun.

State

The various state grants and permits would be obtained by the applicant. Each State Highway Department is responsible for providing permission to bore under highways.

Texas

Texas has no further permitting requirements.

New Mexico

The Commissioner of Public Lands would grant rights-of-way easements for crossing state land.

Colorado

The State Board of Land Commissioners would grant rights-of-way easements for crossing state land. The Division of Wildlife would grant easements for lands crossed which are owned by that division.

Utah

The State Board of Land would grant rights-of-way easements for crossing state land. The State Division of Wildlife Resources would grant easements for lands crossed which are owned by that Division.

Wyoming

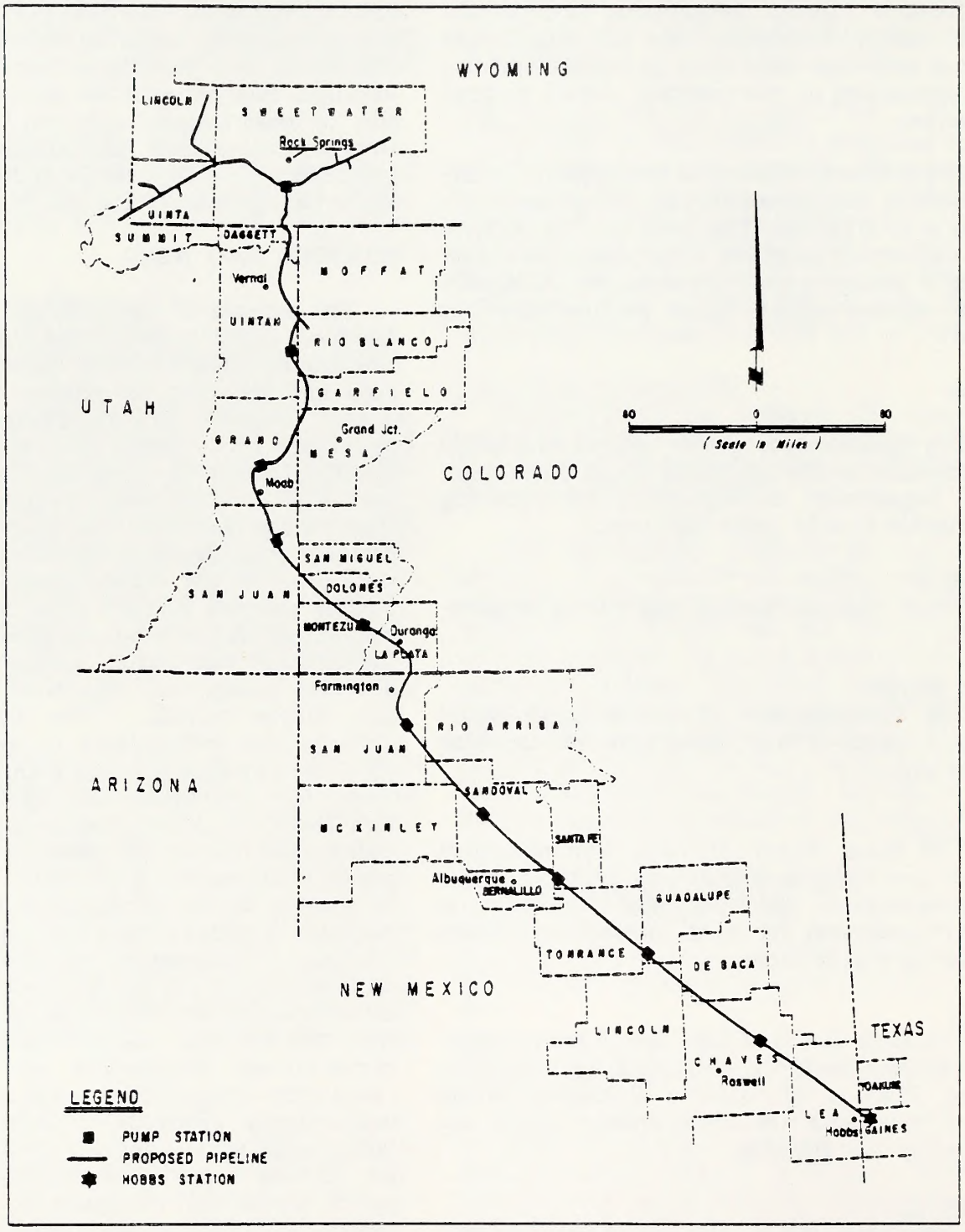
The State Board of Land Commissioners would grant rights-of-way easements for crossing state land.

Other Jurisdictions

Irrigation and water conservation districts, drainage districts, counties, and other appropriate jurisdictions would be responsible to issue easements and permits as appropriate. For instance, relevant counties would grant permission to cross county roads and the Middle Rio Grande Conservancy District would need to grant permission to cross their drainage channel which runs parallel to the Rio Grande.

PURPOSE AND NEED

The purpose of the proposed pipeline is to transport liquid hydrocarbons from gas processing plants located in New Mexico, Utah, Colorado and Wyoming to existing facilities near Hobbs, in Gaines County, Texas (See Map 1-1 and Table 1-1). Hobbs Station is an existing MAPCO facility to which existing pipelines are connected. From Hobbs Station, the various shippers can have the liquid hydrocarbons transported through existing pipelines to either the Gulf Coast or the Midwest (Map 1-2). The applicant selected Hobbs Station as the point of connection for the proposed pipeline because of the existing distribution system. The station also has underground salt storage capacity of one million barrels. The existing storage capacity and connections to various existing pipelines provides shippers with decision flexibility for destination and delivery schedule. This flexibility of decisionmaking is similar in concept to the use of "wheeling" in electrical power redistribution of product from one owner to another or the exchange of the product in response to market conditions and demand destinations. The shippers can use the products at some destinations or sell the products for use at other destinations. Since this is a common carrier, the ultimate use and destination of the mixed-stream components are unknown and result from discretionary decisions by the various shippers involved. The proposed action indicates an initial capacity for 35,000 BPD and an ultimate capacity of 65,000 BPD. Anticipated production increases of liquid hydrocarbons in the Rocky Mountain Overthrust Area (the Area) (see glossary for definitions of various technical terms) have created a need for



Map 1-1. GENERAL LOCATION OF PROPOSED ACTION

Table 1-1. DESCRIPTION OF EXISTING AND PROPOSED GAS PROCESSING PLANTS[a]

Plant Operator	County	State	Status[b]	Appendix A Map Number	Township	Range	Section (feet)	Length of Spur[c]	1979 Production BPD of NGL[d]	Estimated Injection Pump Horsepower[e]
El Paso-Blanco	San Juan	NM	E	8	29N	11W	14	1000	9,433	140
Northwest Pipeline-Ignacio	La Plata	CO	E	8	34N	9W	36	1000	3,847	60
Gulf Energy Processing-Papoose Canyon	Dolores	CO	E	9	40N	18W	5	500	119	5
Chevron-Rangely	Rio Blanco	CO	E	13	2N	103W	23	500	721	15
Champlin-Yellow Creek	Summit	UT	1980 U	18	3N	8E	9	500	n.p.	n.p.
Quazar-Pineview	Summit	UT	E	18	2N	7E	3	500	2,119	35
Union-Lisbon	San Juan	UT	E	10	30S	24E	22	500	1,683	30
Amoco-Ryckman Creek	Uinta	WY	1981 P	18	17N	119W	13	500	n.p.	n.p.
Champlin-Brady	Sweetwater	WY	E	16	16N	101W	11	1000	588	10
Gas Producing Properties-Patrick Draw	Sweetwater	WY	E	16	19N	99W	12	500	433	10
Cities Service-Red Desert	Sweetwater	WY	E	16	19N	96W	7	500	883[f]	20
Texaco-Table Rock	Sweetwater	WY	E	16	18N	98W	1	500	135	5
Champlin-Patrick Draw	Sweetwater	WY	E	16	19N	99W	25	500	707	15
Amoco-Whitney Canyon	Uinta	WY	1980 P	18	17N	119W	17	500	n.p.	n.p.
Mt. Fuel-Church Buttes	Uinta	WY	E	15	16N	113W	1	500	143	5
Northwest Pipeline-Opal	Lincoln	WY	E	17	21N	114W	27	500	3,638	60
Amoco-Moxa Arch	Lincoln	WY	1982P	15	19N	112W	29	1000	n.p.	n.p.

[a] Plants presently known to be potential shippers in MAPCO's proposed pipeline. Electrically operated pumping units for injecting the liquid hydrocarbons into the pipeline would be installed by the plant operator.

[b] Distinction is made between those plants which currently exist (E), or are under construction (U) and estimated completion dates for those formally proposed (P).

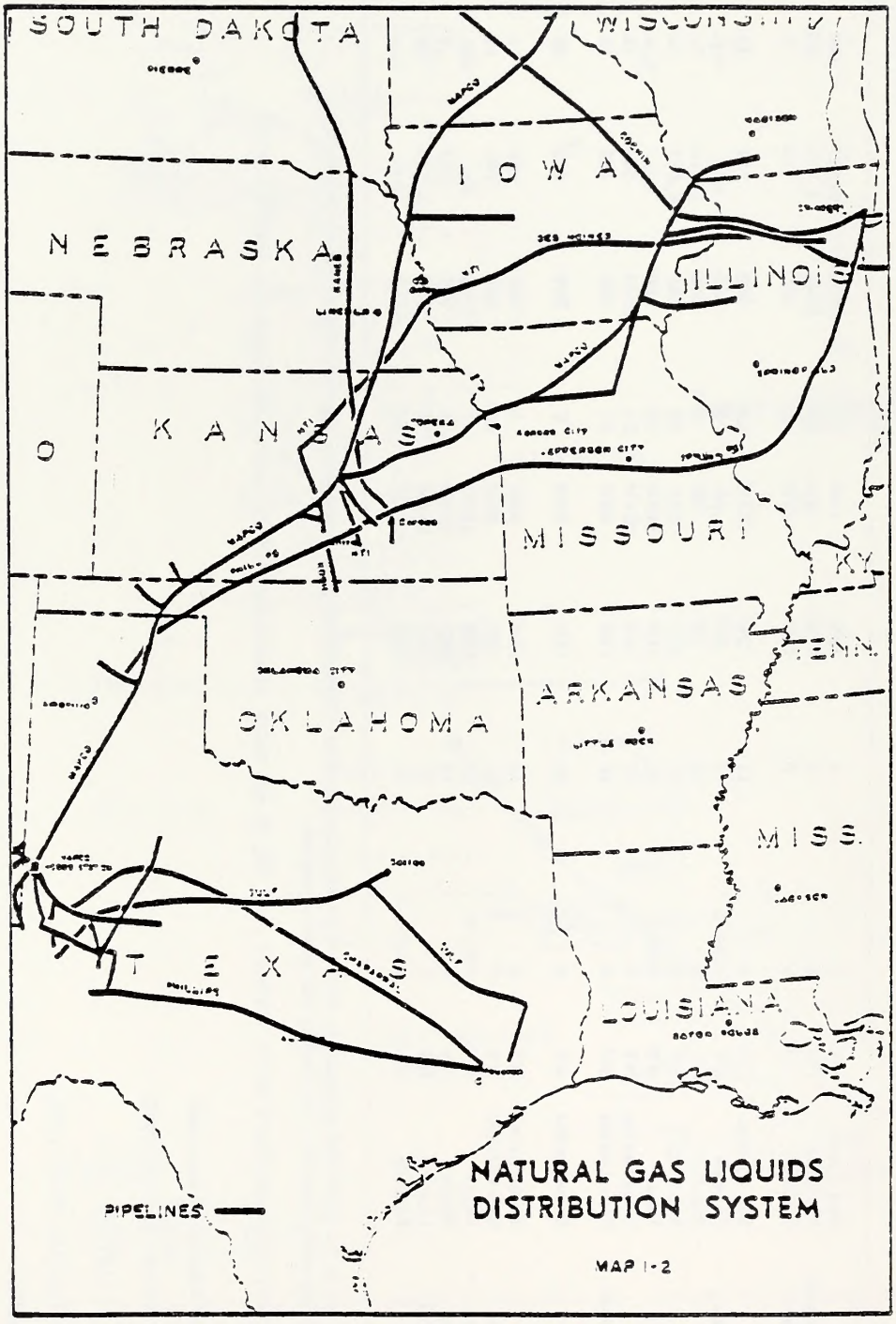
[c] All proposed spurs are 4 inches in diameter.

[d] Source: Oil and Gas Journal, June 25, 1979.

[e] Estimates developed by MAPCO.

[f] Source: Western Oil Reporter, March 1980.

n.p. = No current production.


SOUTH DAKOTA
IOWA
NEBRASKA
ILLINOIS
KANSAS
MISSOURI
KY.
TENN.
ARKANSAS
OKLAHOMA
MISS.
TEXAS
LOUISIANA
PIPELINES
NATURAL GAS LIQUIDS
DISTRIBUTION SYSTEM
MAP I-2

additional transportation of the products from the Area since production estimates exceed local demand for the products. In early 1979 the total production of light liquid hydrocarbons in the Area was approximately 18,000 BPD. Through contact with producers, the applicant has estimated that production increases would reach 43,000 BPD by 1982, 60,000 BPD by 1985, and 110,000 BPD by 1990. Further estimates indicate that at least 65,000 BPD would be available to export to other markets after satisfying local demand by 1990.

The transported liquid hydrocarbons would consist of a mixed stream of butane, ethane, iso-butane, natural gasoline and propane. Ethane is used in the manufacture of polyethylene materials. Propane is used for space heating, cooking, fuel and peak industrial loads. The butanes and natural gasoline are used by refineries for the manufacture of motor fuels. The proportional composition of the mixed stream would vary in accordance with the character of the natural gas being processed at the plants and with shipper discretion. Characteristically, the hydrocarbons are gaseous under atmospheric conditions. In storage and in the pipeline these products are handled and transported under pressure (between approximately 350 to 1,835 pounds per square inch [psi]) in a liquid state for more efficient transportation.

LEVEL OF ANALYSIS

Analysis of the effects of construction and operation of the proposed pipeline and related facilities includes the electrically operated injection pump units needed and installed by the various processing plant operators to make use of the common carrier pipeline. These injection pumps are small and visually appear as an integrated part of the plant. Any new construction of the processing plants would have to be in conformance with NEPA.

The analyses were otherwise limited to the project components for the proposed action and alternatives.

Corridor analysis, i.e., consideration of future use of the proposed routes by other projects was not considered. The environmental effects and impacts identified for this project would not necessarily be the same (or of the same magnitude) for future projects in the areas affected. The viability of this proposed ROW for future projects would need to be determined on a case-by-case basis.

Cumulative impacts were analyzed insofar as other projects with potentially common construction schedules were identified. The addition of the proposed pipeline to the oil and gas industry infrastructure was also evaluated.

PROPOSED ACTION

Special Siting Considerations

As summarized in Table 1-2, the proposed action would be located on and would directly affect approximately 7101 acres of federal, state, Indian, and private lands. The buried pipeline would not traverse any lands under the jurisdiction of the National Park Service (NPS) (i.e., National Parks and National Monuments), or existing or proposed NPS and FS RARE II or Wilderness Study Areas. Furthermore, the proposed action would be near existing pipelines or other existing ROW for approximately 92 percent of its length (Table 1-3). The pipeline would cross 1 proposed Wild and Scenic River — the Green River (Brown's Park) at milepost 822. The proposed pump stations would be sited to avoid locations on or adjacent to cultivated lands, 100-year floodplains, and areas of crucial wildlife use.

Project Components

The following project components, including construction, operation, and maintenance were considered in the environmental analysis. As appropriate, they are also subject to compliance with regulations and procedures for Cultural Resources and Threatened and Endangered Species. Specific locational details (topography, towns, land status, etc.) near the proposed action are shown on Maps 1 to 18 in Appendix A. The proposed pipeline system would consist of the following 8 elements.

1. 669 miles of 10 3/4" outside diameter (O.D.).

2. 194 miles of 12 3/4" O.D. main pipeline.

3. 309 miles of 6", 8", or 10" gathering system pipeline:

Table 1-2. OWNERSHIP OF LANDS AFFECTED BY PROPOSED ACTION

	BLM		STATE		BIA		FS		PRIVATE		TOTAL	
STATES	Miles[a]	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres
TEXAS	0.0	0	0.0	0	0.0	0	0.0	0	8.7	53	8.7	53
NEW MEXICO	119.2	722	62.7	380	45.2	274	0.0	0	207.8	1,260	434.9	2,636
COLORADO	48.7	295	6.9	42	7.6	46	6.0	36	96.2	583	165.4	1,002
UTAH	147.4	893	36.5	221	0.0	0	0.0	0	56.8	344	240.7	1,458
WYOMING	158.1	958	13.5	82	0.0	0	1.5	9	149.1	903	322.2	1,952
TOTAL	473.4	2,868	119.6	725	52.8	320	7.5	45	518.6	3,143	1,171.9	7,101

[a]All mileages rounded to nearest .1 mile.

Table 1-3. STATUS OF PROPOSED ROW WITH RESPECT TO OTHER UTILITIES

	Existing MAPCO ROW	Near Existing Utility	Not Near Existing Utility	Total
MAINLINE				
Miles	415.5	407.9	39.6	863.0
Percent	48	47	5	100
GATHERING LINES (including spurs)				
Miles	0	259.4	49.8	309.2
Percent	0	84	16	100
TOTAL				
Miles	415.5	667.3	89.4	1172.2
Percent	35	57	8	100

			Mileposts			
78 miles	of	6"	0	to	78	East leg, WY
91 miles	of	10"	0	to	91	West leg, WY
63 miles	of	6"	0	to	63	North leg, WY
23 miles	of	6"	0	to	23	Northwest leg, WY
23 miles	of	8"	91	to	114	West leg, WY
8 miles	of	6"	80	to	122	West leg, WY, UT
6 miles	of	6"	0	to	6	Rangely leg, CO
4 miles	of	6"	0	to	6	Patrick Draw, WY
3 miles	of	6"	0	to	3	Table Rock, WY
2 miles	of	6"	0	to	2	Lisbon, UT
8 miles	of	6"	0	to	8	Church Butte, WY

4. Five turbine-driven pump stations for transportation of 35,000 BPD initially, and 10 pump stations for ultimate capacity of 65,000 BPD when and if hydrocarbon production increases as estimated (see Table 1-4 and Figure 1-1 for pump station details). Electrical service (220 volts) and telephone lines would be newly installed at each pump station (Table 1-5). The proposed Dragon Pump Station would require a microwave tower.

5. Between 110 and 125 above-ground gate valves accompanied by the same number of check valves (see Figure 1-2 for illustration).

6. Between 27 and 32 above-ground scraper traps with check valves (see Figure 1-2).

7. To minimize corrosion of the pipe, cathodic protection systems consisting of groundbeds and rectifiers would be sited and installed after construction. The number of these and their locations are based on tests of pipe-to-soil potential and non-interference with other systems. However, about 18 cathodic protection rectifiers would be needed. These would be sited to be close as possible to existing power sources. Groundbeds are subsurface facilities. Rectifiers are metal boxes (of about 21 x 13 x 14 inches) attached to a power service pole about 35 feet high. Wires would be strung to these poles from the nearest source of electricity. These would be sited to avoid conflicts with performance of cathodic protection systems of other pipleines.

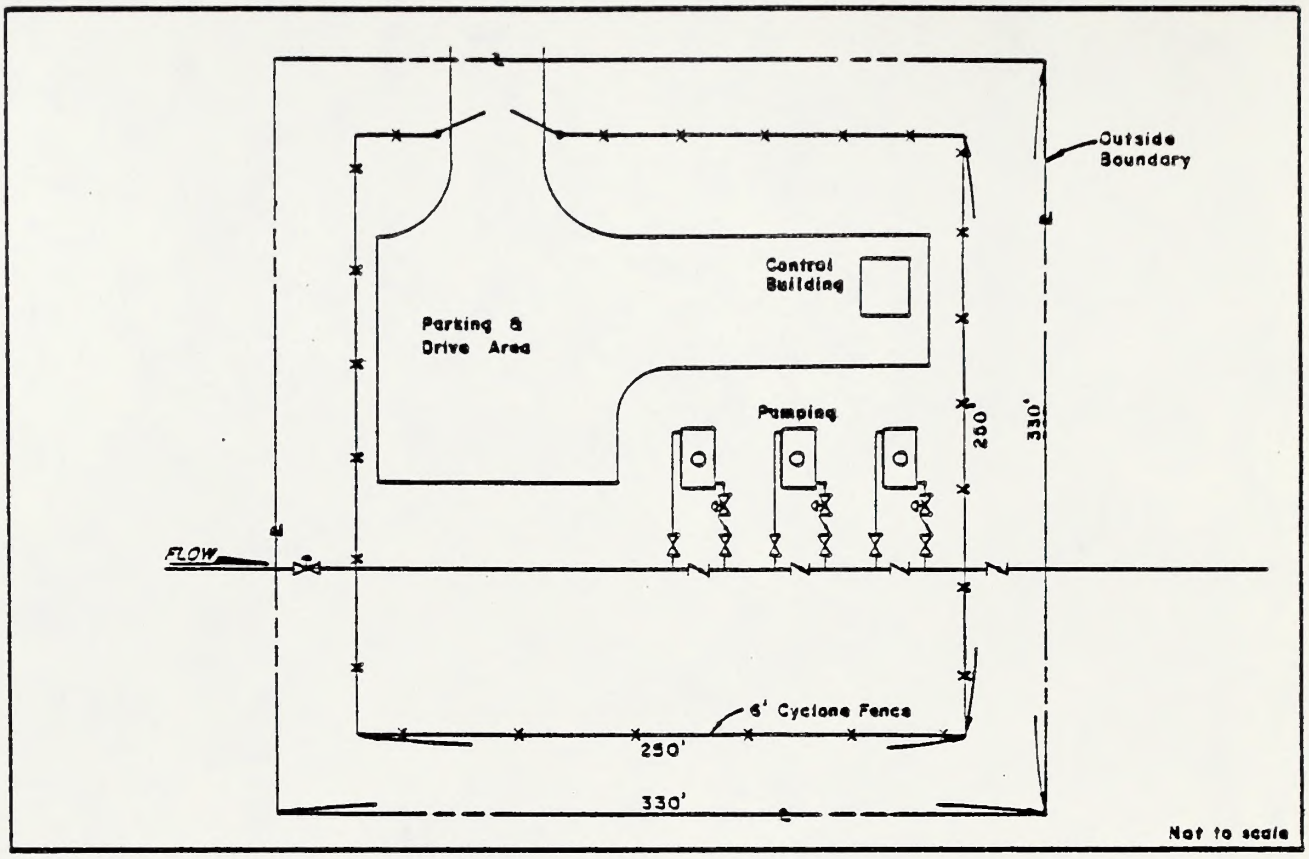
8. The applicant would install right-of-way markers that would be the size, color, type and number designated in accordance with the regulations of the U.S. Department of Transportation.

Construction of new access roads is not proposed for construction or operation of the proposed action. Existing roads or the ROW itself would be used for surface travel. Roads used would be maintained during and rehabilitated after construction.

Operation and Maintenance. Aerial patrols would inspect the ROW at least every two weeks. Surface traffic would be limited to valve inspections which occur at least once every six months and ROW maintenance and emergency repairs to the pipeline. An operating and maintenance staff of about 15 permanent employees would be distributed in towns along the proposed route. The various pressures, flowrates and status information of the system would be telecommunicated from the pump stations to the applicant's headquarters in

Table 1-4. LOCATION OF PUMP STATIONS

NAME	County	State	Township	Range	Section	Milepost	Elevation (feet)
Initial Requirement for 35,000 BPD							
White Lakes	Chaves	NM	8 S	28 E	36	85	3,920
Edgewood	Santa Fe	NM	10 N	7 E	3	252	6,600
Huerfano	San Juan	NM	26 N	10 W	21	401	6,525
Lisbon	San Juan	UT	30 S	24 E	29	568	5,975
Rock Springs (Highway 373)	Sweetwater	WY	16 N	105 W	20	863	7,300
Additional Requirement for 65,000 BPD							
Duran	Guadalupe	NM	2 N	16 E	2	175	5,745
San Luis	Sandoval	NM	17 N	3 W	13	324	6,485
Dolores	Montezuma	CO	37 N	14 W	31	496	7,120
Thompson	Grand	UT	21 S	20 E	29	636	5,120
Dragon	Uintah	UT	11 S	25 E	34	732	5,610



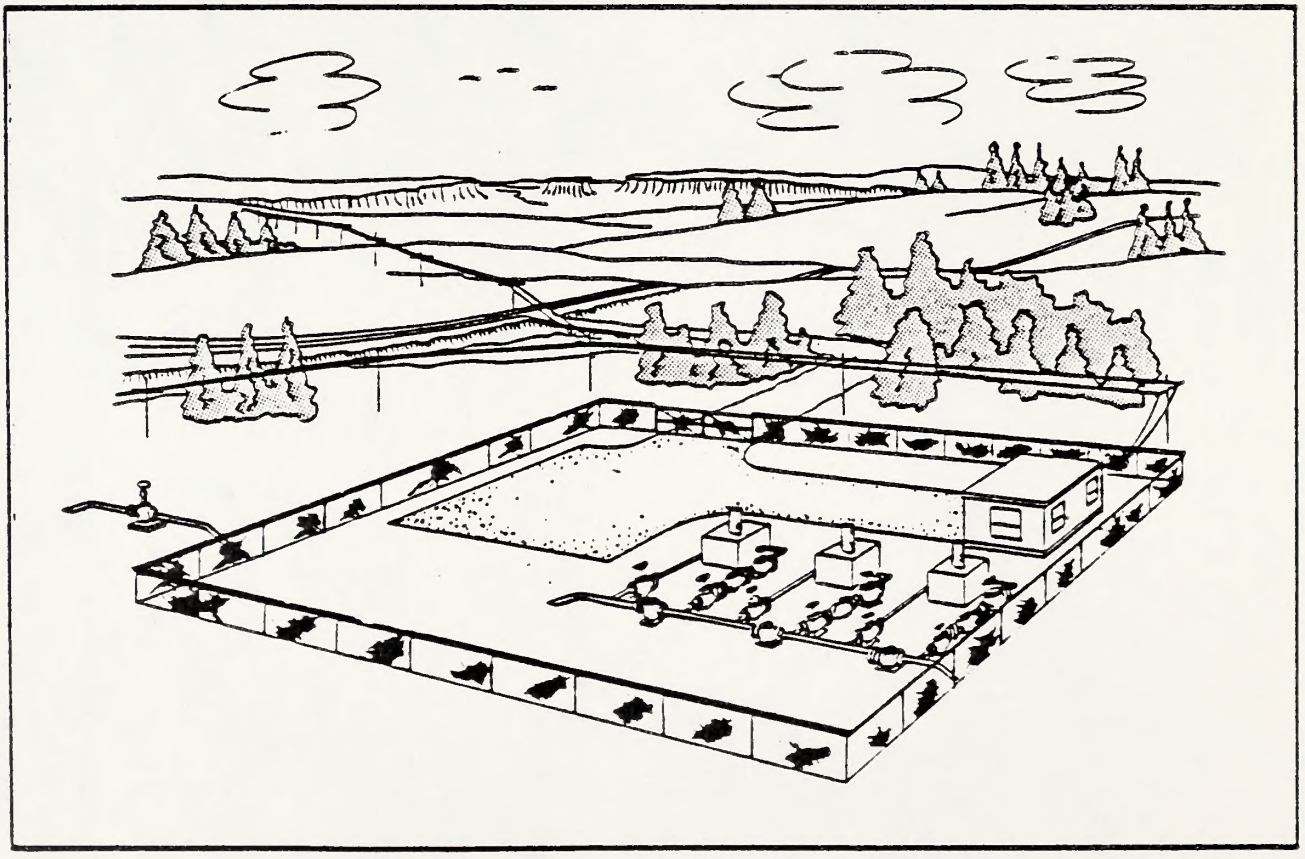


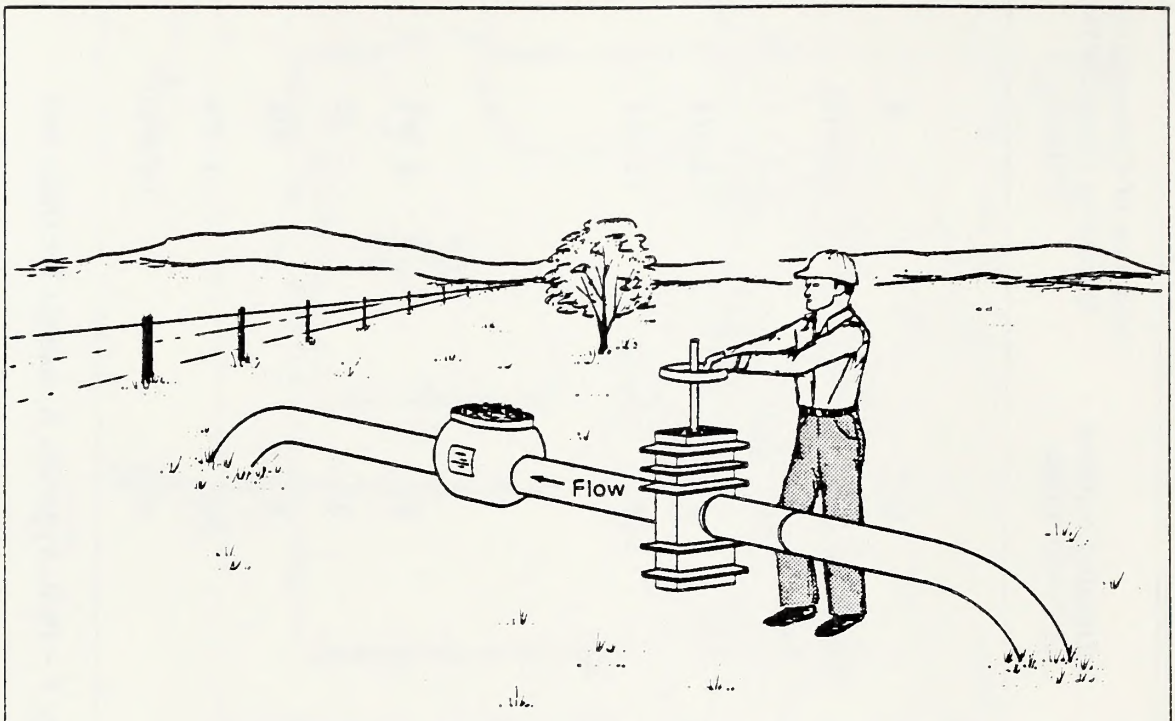
Figure 1-1. TYPICAL PUMP STATION

Table 1-5. PUMP STATIONS: COMMUNICATION AND ELECTRICAL SERVICE[a]

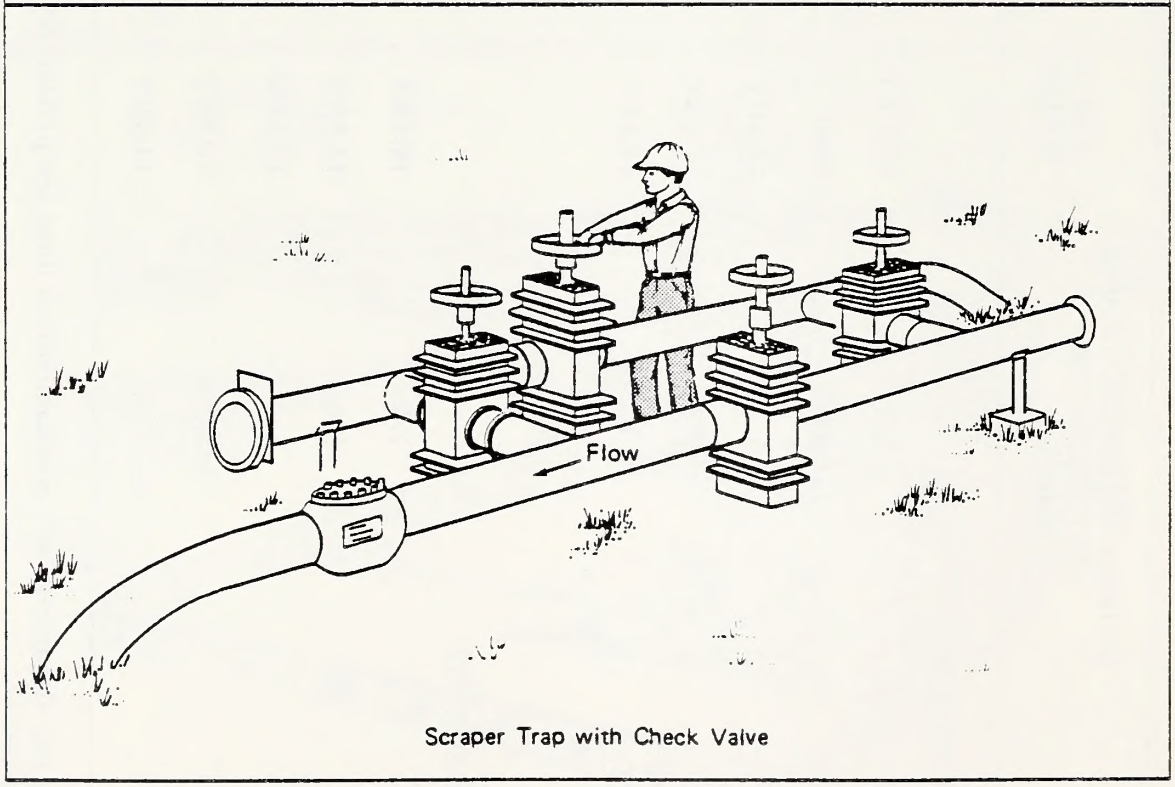
Pump Station Name	Distance of Electricity Source to Pump Station (miles)	Size of KV Line	Estimated Number of Power Poles	Distance of Communication Source to Pump Station (miles)
For 35,000 BPD capacity				
White Lakes, NM	1/2	14.4 KV	9	1
Edgewood, NM	(at site)	none	none	(at site)
Huerfano, NM	1 1/4	14.4KV	28	6
Lisbon, UT	2/5	12.4KV	8	2 3/4
Rock Springs, WY (Highway 373)	13	14.4KV	230	12 3/4
For 65,000 BPD capacity				
San Luis, NM	1/2	14.4KV	9	6 1/2
Duran, NM	1/10	14.4KV	3	12
Dolores, CO	1/5	14.4KV	5	3/4
Thompson, UT	1 1/2	4.16KV	30	1 3/4
Dragon, UT	(at site)	14.4KV	3	(at site)[b]

[a] The routes for the electricity and communication lines are plotted on Maps 1 - 18 in Appendix A, except for those less than .5 mile in length.

[b] A 170-foot microwave tower would need to be constructed by the relevant utility company within the pump station area.



Gate Valve with Check Valve



Scraper Trap with Check Valve

Figure I-2. ABOVE-GROUND VALVES

Tulsa, Oklahoma, for monitoring by personnel on a 24 hour a day basis.

Construction Methods

Land owners, permittees, and other regular users and developers of public lands in the ROW would be notified in advance of construction activities which could affect their business or operations. Notification to land owners would be given by mail. Local permittees and tenants would be notified in person a few days ahead of construction. Other notification would be made by various means, including placing signs at temporary road closures in advance of construction. Ranchers would be advised of any fence openings, disturbances to range improvements, or other range-use related structures in advance of construction.

A pre-construction plan would be developed for BLM lands in accordance with 43 CFR part 2882.2-4(c), Management of Oil and Natural Gas Pipelines. The authorized officer would require plans for construction, operation, maintenance, and termination of the pipeline system. At a minimum, the plans would include:

- schedules for construction of the pipeline and all related facilities and estimated construction costs
- plans for the protection of the environment during construction, operation, maintenance and termination of the pipeline
- plans for emergency repair of any rupture during operation, containment of effluent and restoration of damage.

For FS administered lands, the applicant would also prepare a project construction plan, fire plan, a landscape plan, and a maintenance plan. These plans would be approved by the authorized officer prior to commencement of construction of the project and would include:

- the construction plan, including the alignment of the pipe, contract specifications, access roads, clearing of vegetation for trenching, pole setting, type of trench by area, cuts and fills, and any other activities related to construction of the project;
- the fire plan, including a description of channels of responsibility for fire prevention and suppression, attack procedures, tools, equipment, and manpower;
- the landscape plan would show, but not be limited to (a) the display of the patterns and density reduction of the vegetation that would be used to reduce the "slot" effect that may be created by the pipeline, (b) the species and methods of revegetation, and (c) a soil erosion control display. Also, the landscape plan would show the areas of slash disposal and type of slash disposal;
- the right-of-way maintenance plan would be prepared immediately after construction. This plan would include emergency measures in case of a break.

Construction methods would be the same for all pipe sizes. Construction activities would normally be confined to a 50-foot ROW (Figures 1-3 and 1-4) along the proposed route. Only the portion of the ROW needed for construction would be cleared. Typical construction activities require clearing above-ground vegetation and obstacles from an average 35-foot width of the ROW to allow safe and efficient operation of construction equipment. Blading of the ROW would not be done unless it is absolutely necessary for the movement of machinery and equipment or the installation of pipe (for instance, it is sometimes necessary to blade in areas with steep side slopes). In some areas of rough terrain, a 50-foot ROW clearance would be the minimum necessary for safe and efficient construction. To further ensure vehicle safety, it may be necessary to construct temporary bridges or culverts across creeks and arroyos on the working side of the ROW. The approaches may need to be cut away for installation, but would be returned as nearly as practical to the original condition. Where this method is used, materials would be obtained either from (1) the ROW, (2) transported commercial sources or, (3) adjacent lands by

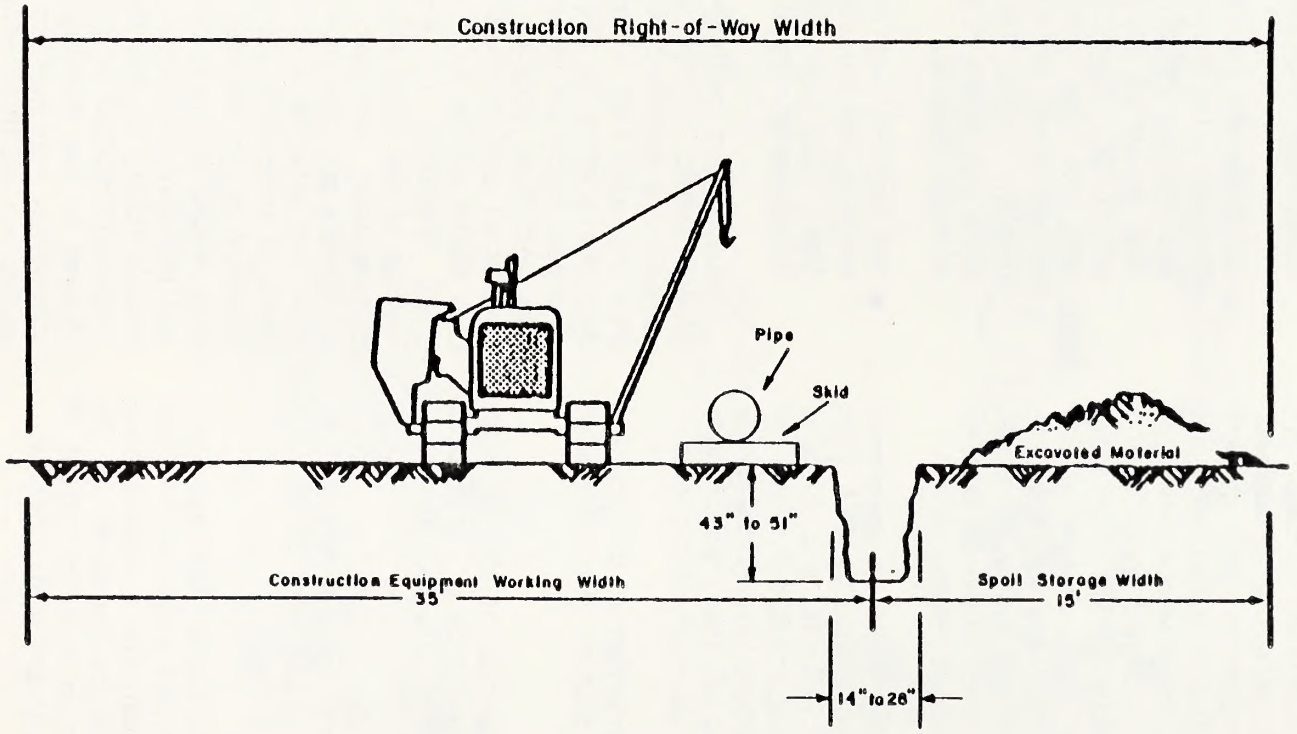


Figure 1-3. CONSTRUCTION RIGHT-OF-WAY USE
(not to scale)

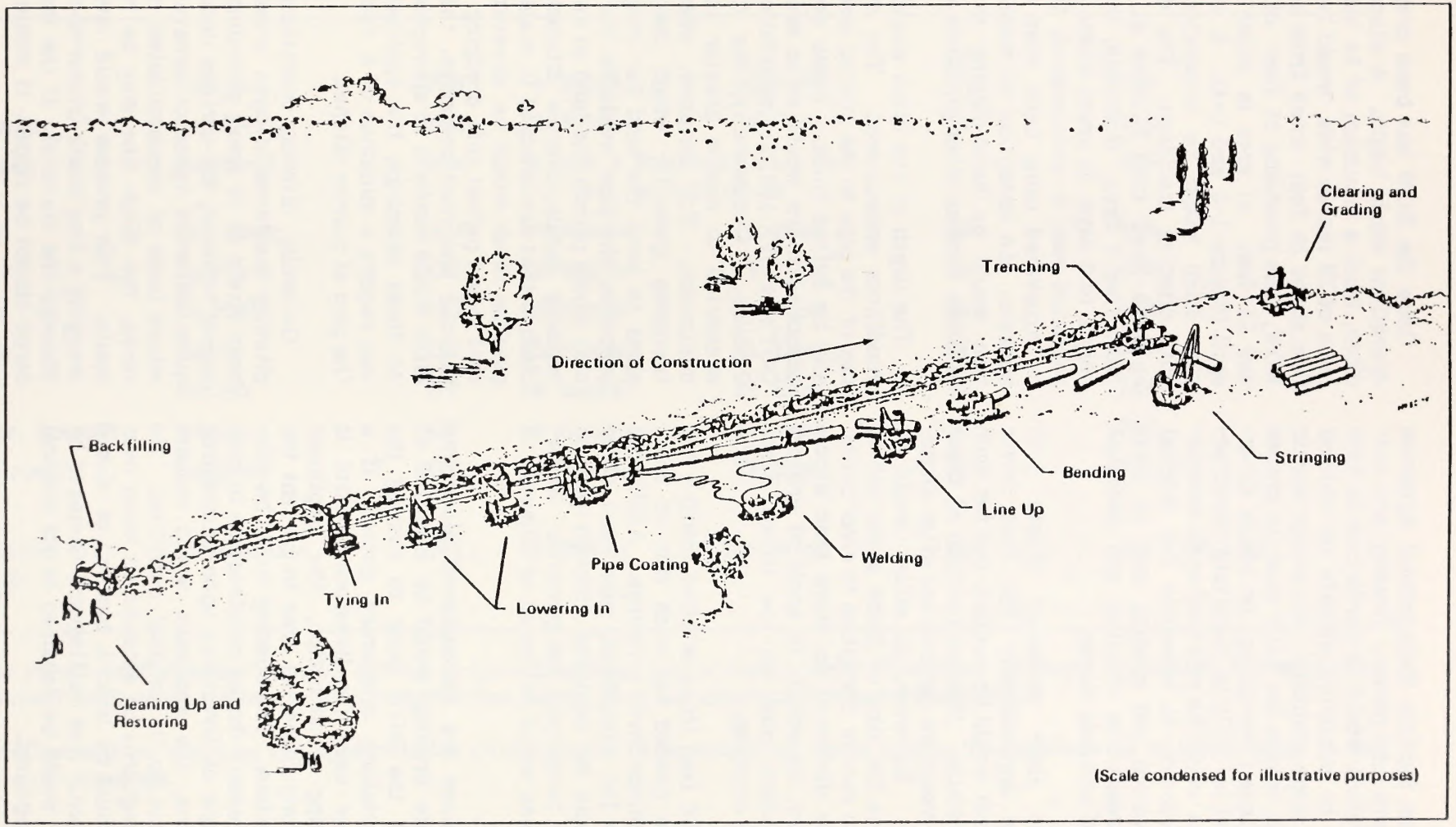


Figure I-4. TYPICAL CONSTRUCTION ACTIVITIES

permission from Surface Management Agencies (SMA) or private land owner. Grading and cut-and-fill excavation would be performed in such a manner as to minimize effects on natural drainage and slope stability. On steep terrain or in wet areas, where the ROW must be graded at two elevations (two-toning) or where diversion dams must be built to facilitate construction, the areas would be restored upon completion of construction to resemble the original grade. Excavation and grading may be performed to increase the stability and decrease the gradient of unstable slopes.

For major river crossings (Table 1-6) cleared areas approximatly 250 feet (river front) x 450 feet would be needed, one for each side of the crossing. Precise location of these staging areas would be determined after engineering survey. However, an effort would be made to reduce the size of these areas and to locate them to reduce disruption to river banks. They would be disturbed no more than absolutely necessary, especially in areas of critical visual significance, such as the Green River (Brown's Park) crossing.

An area 100 feet (road or river front) x 250 feet would be needed for each side of road, railroad and minor river crossings. Additional storage areas for equipment, pipe, and other materials would be acquired through private permission or temporary use permits. Generally, these areas would not be on or adjacent to the ROW.

Where fences are encountered along the ROW, adequate bracing would be installed at each edge of the ROW prior to cutting the wires and installing temporary gates. If a natural barrier used for livestock control is damaged during construction, the applicant would adequately fence the area to prevent the escape of livestock. The opening would be controlled as necessary during construction to prevent the escape of livestock; upon completion of construction, the applicant would reconstruct the fence to its original condition. No gates or cattleguards on established roads over public land would be locked, blocked or closed by the applicant. Any cattleguard damaged by the applicant would be repaired to its original condition or replaced.

Once the ROW has been prepared, ditching operations would begin. A standard dimension ditch, from a minimum of 14 inches to a maximum of 28 inches wide, would be centered on a line about 15 feet away from one edge of the ROW, thus providing 35 feet of working space and 15 feet of area in which to place ditch spoil (Figure 1-3 and 1-4). A standard dimension ditch would be excavated mechanically with ditching machines. The ditch would be open no more than 7 miles at a time for no more than 5 days. Normally, the ditch is open only 1 to 2 days. In areas where loose or unconsolidated rock is encountered, the ditch would be excavated using back hoes and clam shell buckets. An exception to mechanical excavation would be hand-digging to locate buried utilities, such as other pipelines and cables.

The depth of the ditch would vary with the conditions encountered. The cover from the top of the pipe to the ground level would generally be 3 feet thick. These depths and those discussed above would be in conformance with DOT's 49 CFR 195, Transportation of Liquids by Pipeline. Occasionally, the ditch would be excavated to depths greater than the stated minimums. For instance, when the pipeline traverses areas for which there are definite plans to level the land for irrigation or other purposes, the pipe would be buried at a depth that would permit the land to be leveled. When crossing canals, borrow ditches, or irrigation ditches that are dredged to maintain depth, the pipeline ditch would be excavated to a depth that would permit safe dredging operations. At railroad and road crossings, the depth of the ditch would conform to appropriate regulations. At these crossings, the applicant's specifications require a minimum of 4 feet of cover over the pipe at borrow ditches.

Generally, ditching operations would employ ditching machines in open areas and backhoes near rivers or in areas providing little working space; however, sub-surface conditions may require different types of excavation. In areas where loose or unconsolidated rock is encountered, the ditch line may be ripped mechanically. This process would involve a tractor dragging a long shank (ripper-tooth) behind it to dislodge the material. If the material encountered cannot be ripped, it would be blasted. In

Table 1-6. MAJOR RIVER CROSSINGS[a] FOR PROPOSED ACTION

River	County	State	Township	Range	Section	Milepost
Pecos	Chaves	NM	6 South	26 East	20	106
Rio Grande	Sandoval	NM	13 North	4 East	16	280
Rio Puerco	Sandoval	NM	M and S Montoya Grant and Ojo Del Espiritu Grant			319
San Juan	San Juan	NM	29 North	11 West	26	418
Animas	La Plata	CO	34 North	9 West	18	459
La Plata	La Plata	CO	35 North	11 West	14	472
Colorado[b]	Grand	UT	25 South	21 East	27	605
White	Uintah	UT	10 South	24 East	12	744
Green (nr. Jenson)	Uintah	UT	5 South	23 East	9,4	786
Green (Brown's Park)	Daggett	UT	2 North	25 East	31	823
Green (Davis Bottom)[b]	Sweetwater	WY	17 North	106 West	8	19(West Leg)

[a] Of the rivers and streams crossed by the proposed action, major rivers were identified as those for which the applicant would need to develop a site specific construction design plan for construction contractor use.

[b] Application will be made by the applicant for COE Section 10 permit (Eng. Form 4345). The nationwide 404 will apply to the balance of crossings.

preparation for blasting, unconsolidated material would be removed from the ditch line and a series of holes would be drilled by air-powered drills generally suspended from a side-boom tractor (twin-drills), which also tows the compressor that supplies the air. However, self-propelled drills (air-track) may be used if a significant amount of drilling is to take place in one location.

Blasting is used as little as possible and only when it is absolutely necessary. Normally, the effect of the blast is to scatter unconsolidated materials on an area confined to the ROW. When blasting occurs near private dwellings or in areas where people congregate or work, the minimum amount of cover would be 2.5 feet; in open areas, minimum cover would be 1.5 feet. Where blasting is necessary, the following safety precautions would be taken:

- in areas of human use, blasting would be blanketed (matted);
- landowners or tenants in close proximity to the blasting would be notified in advance so that livestock and other property could be adequately protected;
- before blasting takes place, a clearance would be made to ensure that construction personnel and equipment and local residents were out of danger; and
- blasting would be controlled or limited where damage to rock mass may create slope instability.

Generally, rivers would not be crossed during periods of high flow (e.g., late spring). Figure 1-5 illustrates a profile and plan for a typical river crossing. Construction of crossings can be accomplished within 3 weeks, although some would be complete within 5 days. The ditch would be excavated to the depth which minimizes the effect of scour action to the pipeline during periods of high flow. The ditch would be graded on each side of the river to fit the natural sag of the pipe or pipe bends to minimize potential exposure of the pipe from water erosion. These construction practices would minimize the effects of construction on water flow. The gradient of the stream would be restored upon completion of construction, stream banks would be restored to resemble their original grade, and breakers or riprap would be placed over the pipeline along river banks where necessary. The pipeline would be weighted with concrete to offset bouyancy and to ensure that it remained in the underwater ditch.

Roadbeds which support railroads would be crossed by boring a hole beneath the bed rather than by ditching across the surface. Casing would be installed at these roadbeds and at road crossings where they are required by federal, state, local or railroad authorities. All paved and improved roads would be crossed by boring under them. Gravel, dirt roads and trails are bored if traffic volume is high. Other, rarely used, unimproved roads are ditched and restored.

Stringing, bending, welding, coating, lowering, and tying in the pipe are phases of pipeline construction that generally follow ROW preparation and ditching operations. The pipe would be placed along the ROW behind ditching operations. It would be coated with protective materials and then lowered directly into the ditch. In rocky areas, the bottom of the ditch would be padded to provide a uniform bearing surface for the pipe. Once it was in the ditch, the pipe would be padded with fine materials (sand or soil) where necessary to protect its coating during backfill operations. The sand or soil often must be hauled in.

Backfilling would fill the space below and beside the pipe with loose materials. Backfilling operations would be conducted with an effort to minimize further disturbance to vegetation. Backfill material that could not be placed in the ditch would be crowned on top of the ditch to compensate for future settling. Backfill would be graded and compacted where necessary for ground stability by being flooded, tamped or walked-in with a wheeled vehicle. Once the ditch has been backfilled, the ROW and any other areas affected would be cleaned of trash, brush and other debris to prevent fire hazards. The ROW would be graded where needed and all disturbed surfaces would be restored to approximate the preconstruction grade.

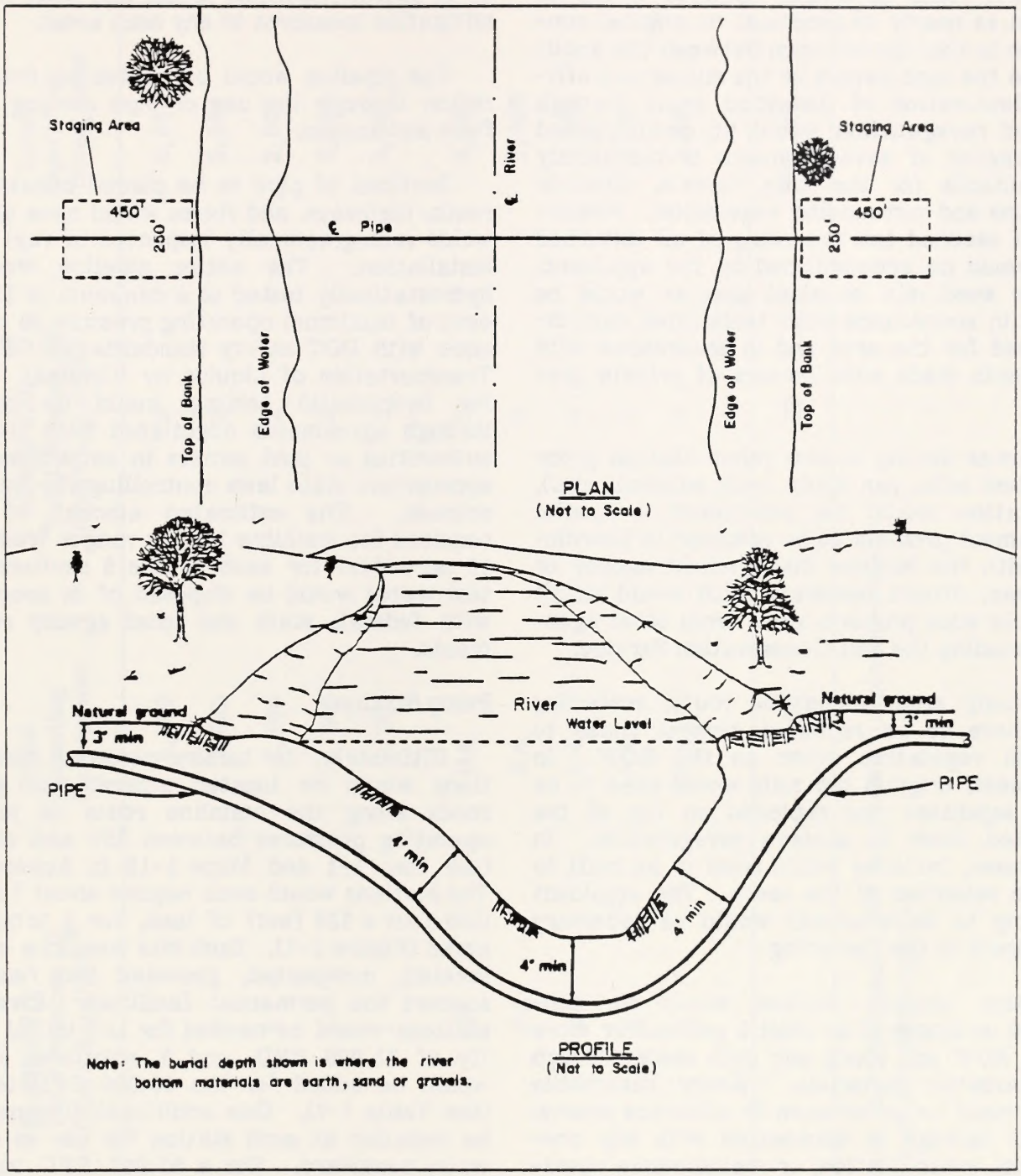


Figure 1-5. PLAN AND PROFILE OF TYPICAL RIVER CROSSING

Completed construction areas (including the ROW) and roads no longer required would be returned as nearly as practical to original condition or to that agreed upon between the applicant and the land owners or the authorized officer. Restoration of disturbed areas through enhanced revegetation would be accomplished by whichever of several means is technically most suitable for the soils, terrain, climatic conditions and surrounding vegetation. Preparation of seedbed and reseeding of all disturbed areas would be accomplished by the applicant, and the seed mix or plant species would be planted in accordance with techniques customarily used for the area and in accordance with agreements made with owners of private property.

In areas having severe rehabilitation problems (slick soils, pan spots, rock outcrop, etc.), revegetation would be considered a special management problem to be resolved in coordination with the surface management agency or landowner. Where necessary, BLM would solicit advice for such problem areas from other agencies, including the Soil Conservation Service.

In many areas along the route, reseeding would have to be repeated several times to establish vegetative cover on the ROW. In some cases, original top soils would need to be saved, separated and replaced on top of the excavated ditch to achieve revegetation. In other cases, terraces would need to be built to enhance retention of the seeds. The applicant is willing to do whatever would be necessary with regard to the foregoing.

Erosion control devices would be constructed on slopes of at least 5 percent or more on the ROW and along any cuts made through unconsolidated materials. Every reasonable means would be undertaken to minimize erosion and soil damage in connection with any construction, rehabilitation, or maintenance operations, including (but not limited to) construction of water bars, cross ditches, or other structures.

During routine aerial reconnaissance, the applicant would monitor the success of erosion control practices and the revegetation program in accordance with the BLM monitoring plan which would be a condition of the ROW grant. The purpose of this monitoring program would be to identify problem areas, and then to apply mitigation measures to any such areas.

The pipeline would be protected from corrosion through the use of pipe coating, rectifiers and anodes.

Sections of pipe to be placed beneath railroads, highways, and rivers would have all girth welds radiographically inspected (x-ray) before installation. The entire pipeline would be hydrostatically tested to a minimum of 125 percent of maximum operating pressure in compliance with DOT safety standards (49 CFR 195, Transportation of Liquids by Pipeline). Water for hydrostatic testing would be obtained through agreements negotiated with the local authorities or land owners in accordance with appropriate state laws controlling the water resources. The estimated amount of water required for mainline testing ranges from 10 to 15 acre feet for each of the 5 sections. The test water would be disposed of in accordance with federal, state and local agency requirements.

Pump Stations

Ultimately, 10 turbine-powered pump stations would be located adjacent to existing roads along the mainline route to maintain operating pressures between 350 and 1835 psi (see Map 1-1 and Maps 1-18 in Appendix A). The stations would each require about 2.5 acres (330 feet x 330 feet) of land, for a total of 25 acres (Figure 1-1). Each site would be cleared, leveled, compacted, graveled and fenced to support the permanent facilities. Five pump stations would be needed for the initial capacity of 35,000 BPD, and 5 additional stations would be added for the 65,000 BPD capacity (see Table 1-7). One additional turbine would be installed at each station for use as a spare when necessary. For a 65,000 BPD capacity, each of the 10 stations would need 2 1000-horsepower turbines. The turbines would be fueled with the hydrocarbons being transported by the pipeline.

One microwave tower (170 feet high at the proposed Dragon Pump Station) is proposed. Communications from each pump station would be by means of leased telephone circuits. At

Table 1-7. PUMP STATION TURBINE AND HORSEPOWER REQUIREMENTS

Station	35,000 BPD Total Number Of Operating Units[a]	Total Operating Horsepower	65,000 BPD Total Number Of Operating Units	Total Operating Horsepower
White Lakes, NM	2	2,000	2	2,000
Edgewood, NM	2	2,000	2	2,000
Huerfano, NM	2	2,000	2	2,000
Lisbon, UT	1	1,000	2	2,000
Rock Springs, WY (Highway 373)	1	1,000	2	2,000
Duran, NM	NA	NA	2	2,000
San Luis, NM	NA	NA	2	2,000
Dolores, CO	NA	NA	2	2,000
Thompson, UT	NA	NA	2	2,000
Dragon, UT	NA	NA	2	2,000
TOTAL	8	8,000	20	20,000

[a]Each station would have one additional 1,000 horsepower turbine as a spare.
NA = Not applicable for 35,000 BPD capacity.

the site of each pump station it would be necessary to have telephone lines for communications and electric lines for electric service, as has been depicted in Figure 1-1. Underground cables are not proposed as no significant adverse visual impacts resulting from the above-ground lines at these locations were identified.

Special Methods

Air and Water Quality

The applicant would conduct all activities associated with the project in a manner which would avoid or minimize degradation of air, land and water quality. During construction, operation, maintenance and termination of the project, the applicant would perform all activities in accordance with applicable air and water quality standards, related facility siting standards, and related plans for implementation, including but not limited to standards adopted pursuant to the Clean Air Act, as amended (42 U.S.C. 1857) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1321).

Pesticide Use

Pesticides would not be used during construction of these pipelines. An Environmental Protection Agency approved herbicide would be used within the fences at pump stations to prevent weed fires and around safety signs within the ROW so they remain visible.

Traffic Safety

Adequate warning signs would be positioned far enough in advance of construction zones that drivers would have sufficient warning to decelerate safely. Signs would be positioned in accordance with relevant regulations.

CONSTRUCTION WORKFORCE AND SCHEDULE

Pipelines

The 1172 miles of main and gathering pipelines would be constructed by 5 crews of about 150 workers each, working simultaneously. Each of the 5 pipeline sections would be constructed by contractors under the applicant's supervision. The teams would require about 60 percent skilled workers and 40 percent unskilled workers. It is likely that construction headquarters would be established in Albuquerque, Farmington, Grand Junction and Rock Springs (2). The towns of Hobbs and Roswell, in New Mexico; Cortez, Durango and Rangely, Colorado; Moab and Vernal, Utah; and Green River, Evanston and Kemmerer, Wyoming may also be used for services at times during the construction period. The pipeline construction schedule would depend on date of approval for beginning construction and weather conditions.

Table 1-8 indicates specific dates during which construction would be avoided due to crucial wildlife use of the areas identified by mile posts. These date spans represent the broadest time period during which crucial wildlife use would be expected according to existing data from BLM or state documents, or consultations with the area biologists. Construction would not occur during these periods unless specifically authorized by the appropriate BLM Area Manager or other Authorized Officer.

Pump Stations

Pump station construction would require 8 workers for each of the 10 sites. Construction would occur during a 90-day period for each pump station. The first 5 stations (for the 35,000 BPD) would be built within the first 18 months after the beginning of pipeline construction. The schedule for building pump stations for 65,000 BPD capacity is unknown, and will depend on the future availability of the liquids.

RESOURCE CONSIDERATIONS

The applicant would undertake a number of construction and restoration practices in addition to those already mentioned. These resource considerations are outlined below. Some apply to all land statuses, others apply only to public or FS lands, and others affect site-specific locales as defined. These practices are intended to minimize environmental impacts.

All Lands

Recreation Resources

Construction of the project may occur during the summer months when tourist and recreational use are high. The following measures

Table 1-8. CRUCIAL WILDLIFE USE AREAS AND PERIODS TO AVOID CONSTRUCTION OF PROPOSED ACTION

Approximate Mile Posts	Dates During Which Construction Would Be Avoided[a]	Reason
MAINLINE		
65 to 79	April 1 to May 31[b]	Lesser prairie chicken booming period
418 to 420	April 1 to May 31[b]	Big game & fish - important habitat
424 to 443	December 1 to April 15[b,c]	Big game crucial winter range
459 - 467	November 15 to April 30[d]	Big game crucial winter range
566 - 568	November 1 to May 15[e]	Big game crucial winter range
586 (Kane Springs Canyon)	March 15 to June 15[e]	Crucial riparian habitat
601 to 605	March 15 to June 15[e]	Crucial wetland habitat
604 (Colorado River)	July 1 to July 31[e]	Crucial fish spawning
664 to 677	May 15 to June 20[e]	Pronghorn antelope fawning area
694 to 700	March 1 to April 30[d]	Chukar breeding grounds
697 to 705	November 15 to April 30[d]	Big game crucial winter range
785	July 1 to July 31[e]	Crucial fish habitat
788 to 800	November 15 to April 1[f]	Big game crucial winter range
800 to 804	March 15 to June 1[f]	Sage grouse strutting grounds
812 to 834	November 15 to April 1[f,k]	Big game crucial winter range
814 to 820	May 15 to July 1[k]	Deer fawning
822	Fall[k]	Brown trout spawning
835 to 843	December 15 to April 1[g]	Big game crucial winter range
850 to 852	March 1 to June 15[h]	Sage grouse strutting grounds
858 to 862	March 1 to June 15[h]	Sage grouse strutting grounds
GATHERING LINES		
EAST LINE		
2 to 3	March 15 to July 1[g]	Raptor nesting area
2 to 5	March 1 to June 15[h]	Sage grouse strutting grounds
18 to 19	March 15 to July 1[g]	Raptor nesting area
17 to 20	December 15 to April 1[g]	Big game crucial winter range
74 to 77	December 15 to April 1[g]	Big game crucial winter range
WEST LINE		
17 to 18	March 15 to July 1[g]	Raptor nesting area
24 to 44	December 15 to April 1[g]	Big game crucial winter range
84 to 96	October 15 to May 15[h]	Big game crucial winter range
114 to 122 (perennial streams)	May 15 to August 15[i]	Cutthroat trout spawning area
NORTH LINE		
5 to 9	October 15 to May 15[h,j]	Big game crucial winter range
46 to 59	October 15 to May 15[h,j]	Big game crucial winter range
NORTHWEST LINE		
2 to 5	October 15 to May 15[h]	Big game crucial winter range

[a]Unless authorized by appropriate area manager.

[b]Gates, J. New Mexico Department of Game and Fish, Santa Fe, N.M.

[c]Bird, W. U.S. Bureau of Land Management, Farmington, N.M.

[d]Whitaker, A. Colorado Division of Wildlife, Denver, Colorado.

[e]Wilson, L.J. Utah Division of Wildlife Resources, Price, Utah.

[f]Smith, D.A. Utah Division of Wildlife Resources, Vernal, Utah.

[g]Dolak, J. U.S. Bureau of Land Management, Rock Springs, Wyoming.

[h]Harrison, K.E. U.S. Bureau of Land Management, Kemmerer, Wyoming.

[i]Rensel, J.A. Utah Division of Wildlife Resources, Ogden, Utah.

[j]Doughty, L.A. Bureau of Land Management, Pinedale, Wyoming.

[k]Wicks, G. Bureau of Land Management, Utah State Director, Salt Lake City, Utah.

would be taken during the construction period to reduce impacts:

- no interference with traffic would occur at road crossings during periods of peak recreational use, namely weekends and holidays;
- temporary detours would be constructed around the construction zone where secondary access roads do not exist;
- detour routes would be established using the nearest available secondary access routes;
- construction would be scheduled so that major recreation areas, such as Flaming Gorge National Recreation Area, Ashley National Forest, or San Juan National Forest, are avoided during holidays and weekends; and
- the work force use would not conflict with tourist use of public campgrounds or forests for temporary housing. However, recreational use of these facilities would not be denied to workers.

Visual Resources

The applicant would make a concerted effort to protect the scenic values of the area of construction and the adjacent land. For example, all above-ground improvements and barricades would be nonreflective. When a safety color is not required, the color used would be chosen to blend with the natural background for that location.

Wilderness Values

As indicated in Chapter Two, the proposed action is not located within a Wilderness Area (or Rare II Area) boundary and does not come closer to a boundary than an already existing road or trail.

Cultural Resources

Prior to initiating any ground disturbance, the applicant would conduct a cultural (archaeological and historical) resources inventory in accordance with BLM Class III inventory guidelines. Prior to ground disturbance, the inventory would be conducted on all lands where previous on-the-ground surveys have not been conducted. The purpose of the inventory would be to identify resources in an effort to avoid, through project design, all known cultural resources. Actions would be taken to locate or protect cultural resources in accordance with the Memorandum of Agreement being developed between the Bureau of Land Management, the Council on Historic Preservation, and appropriate State Historic Preservation Officers.

The applicant would avoid cultural resource properties located during the cultural resource inventory when prudent and feasible (as determined in consultation with the appropriate surface management agency) or as directed by the lead agency. If avoidance is not prudent or feasible, the applicant would develop and recommend a mitigation plan for site specific data recovery. The applicant would fund all protection and recovery measures undertaken. Cultural resource protection measures may include, but need not be limited to, fencing, stabilization, detailed recordation, and other physical or administrative measures.

All sites, buildings, districts and objects identified in the inventory would be evaluated as to their potential eligibility for the National Register of Historic Places. Each SHPO in consultation with BLM would be responsible for formal determination of National Register eligibility and nomination. The inventory and the evaluation would be submitted to the Authorized Officer in advance of any project-related surface disturbance. If eligible sites are located and adverse effects would occur, a site-specific report would be prepared in accordance with the Programmatic Memorandum of Agreement developed for this project. The inventory report would also make recommendations for site-specific protection measures.

During project construction, the applicant would employ a Project Archaeologist to monitor construction activities and inspect the areas of surface disturbance for subsurface cultural source materials. If such materials are discovered, the Project Archaeologist would report the find to the Authorized Officer, provide immediate suggestions regarding the recovery procedures to be undertaken, and leave the find intact until clearance to proceed is granted by the Authorized Officer.

All archaeologists and historians who provide inventory services, perform mitigation, prepare field reports or monitor construction activities, would meet at a minimum, professional qualifications outlined in the proposed guidelines in 36 CFR 66 (Appendix C, Professional Qualifications) and will be approved by the Authorized Officer. All inventory and data recovery work on federal and state lands would be authoirzed under applicable antiquities permits.

A (programmatic) Memorandum of Agreement (MOA) between the Advisory Council on Historic Preservation and appropriate State Historic Preservation Officers and the Bureau of Land Management is currently being developed. The MOA will outline responsibilities to ensure compliance with 36 CFR 800.

Federal and State Lands

Public Monuments and Markers

Where the ROW includes public lands on which cadastral survey monuments and markers are located, the applicant would avoid disturbance or removal of such monuments and markers. If the removal of monuments or markers becomes necessary during specific construction activities, the applicant would advise the appropriate agency of that need. Removal and/or relocation would then be done in accordance with detailed instructions set forth by the appropriate State Director, Bureau of Land Management.

Timber Removal

In the event it becomes necessary to remove timber from the ROW lands, all saleable timber would be purchased by the applicant at the total appraised price determined by the Authorized Officer.

Site Specific

San Juan National Forest, CO (Milepost 480).

A landslide area has been identified near the proposed action in this location. The proposed route has been relocated in accordance with on-ground advice from San Juan National Forest personnel. The suggested location of the proposed route is outside the problem area and has different soil characteristics from the slide area. The relocation would enhance the security of the pipe.

Moab Canyon, UT (Milepost 607-610).

Moab Canyon has been identified as a narrow, heavily used corridor for several existing rights-of-way. As a consequence of this corridor's crowded condition, the precise location of the proposed route through the canyon would be subject to approval by the BLM Moab District Manager.

Jesse Ewing Canyon, UT (Milepost 826 to 828).

Construction in the streambed of this steep and narrow canyon would be avoided by siting the route on the west ridge in a manner to minimize its being visible from the Green River recreation-use area. No more piñon or juniper would be cut from the stand on the ridge than absolutely necessary. Precise location for the pipeline would be determined with the Vernal District Manager, keeping in mind the necessity to avoid sidehill construction in the canyon.

Red Creek Badlands, WY (Milepost 840 to 844).

The applicant proposes to undertake special restoration practices for the 4 miles of ROW which enters the boundary of the Red Creek Badlands area presently under consideration for designation as an Area of Critical Environmental Concern (BLM, ACEC). In order to minimize the effects of erosion from surface disturbance by construction of the proposed action, the applicant would embed the disturbed area with straw or shredded bark or other recommended material, using a sheepsfoot or other appropriate methods to mitigate erosive conditions arising from construction. Construction and restoration in this area would be accomplished by practical means approved by the Rock Springs District Manager. For instance removal of vegetation would not be done unless specifically authorized, and times of construction would be limited to those enabling successful and immediate post construction restoration efforts and to seasons of dry weather.

Flaming Gorge National Recreation Area, WY (Milepost WL 10-11).

The applicant would undertake special measures immediately after construction to minimize the visual and erosion impact of the pipeline clearing. The right-of-way would be

planted with appropriate indigenous plants to restore the area to as near its former vegetation as possible. This may include mulching, planting of wildings, and addition of fertilizers.

Compliance Check and Monitoring

Pre-construction conference(s) would be held with the applicant to clarify procedures and expectations to enable efficient implementation of all requirements. Compliance checks would be made throughout construction by the representative of the Authorized Officer. When all developments and rehabilitation have been completed, a final joint compliance check of the ROW would be made by a representative of the applicant and the authorized officer or his designated representative. The purpose of this check would be to determine compliance with the terms and conditions of the right-of-way grant. The applicant would perform at its own expense any required monitoring, modifications or additional reclamation work needed to comply with the terms and conditions of the ROW grant.

EMERGENCY PROCEDURES

The following procedures were derived from MAPCO's Emergency Procedures. They comply with DOT 49 CFR Part 195, Transportation of Liquids by Pipelines.

Organization Response

Upon completion of a segment of the pipeline, arrangements would be made with local residents and public safety authorities to close designated gate valves when instructed to do so and to assist in securing the area during an emergency. A list indicating name, location and telephone number for every such resident and public safety authority would be maintained by the applicant's dispatcher and local supervisor. The list would be updated annually. On-site training is given prior to commencing operation and personal visits are made to the residents annually thereafter to update training and information.

It would be the responsibility of the Control Center Operator in Tulsa to identify and pinpoint conditions along the pipeline route which might be hazardous to life or property. The MAPCO Control Center is attended 24 hours a day, seven days a week. There, pipeline pressures are monitored continuously through a Supervisory Control System. Using this system the responsible Control Center Operator can accomplish several operations through remote control, including start and stop pumps at pump stations and open and close remotely operated valves located there.

Indications of hazardous conditions would be obtained from telemetered data, aerial patrol flights, landowners and other local residents. The Control Center Operator, upon receiving indications of possible hazardous conditions, may, without referral to higher supervision, implement the emergency procedures. The emergency procedures would be implemented as follows, making sure that the first priority would be to secure the area so that possible damage to persons or property is reduced or eliminated.

1. The Control Center Operator's decision to implement the Emergency Procedure requires shutting down the pumping units (starting with units nearest the leak) feeding the leak section as quickly as possible; diverting the flow upstream from the leak to storage; running pumping units down stream from the leak to existing storage; running pumping units down stream from leak until a low flow condition exists; determining the type of product in leak section; and notifying company people and local people designated as emergency contacts.

2. Control Center Operators have the authority, without referral to supervisors for approval, to shut down the Pipeline System and implement the Emergency Procedure upon receiving a report or indication of a leak.

3. During this stage of the Emergency Procedure, all Control Center and field efforts must be directed to securing the area by getting people to the leak area to close valves, establish road blocks, evaluate hazards, warn people, and in general prevent damage to life and property. One company employee capable of evaluating, planning and coordinating leak site activities must go directly to the leak site and take charge.

4. The company employee in charge at the leak site would determine the proper way of controlling the liquid or vapor release. If the product is slow vaporizing material, such as natural gasoline, an earthen dike can usually be set up to contain the spill. If the product is a rapidly vaporizing material and combustible, the vapor cloud can be set on fire after a complete investigation to evaluate the extent of the vapor cloud and the location of people and property. If conditions are such that the vapor cloud cannot be safely ignited, continuous surveillance around the boundaries of the vapor cloud must be made until stopples can be set outside the leak area.

5. Simultaneous with these actions, the nearest pipeline maintenance crew would be notified and directed to go to the leak site with a backhoe, tractor, welding truck, emergency vehicle, and safety equipment.

6. During the repair of the pipeline system, the supervisor in charge would demand strict adherence to all safety rules. Particular attention would be devoted to checking the atmosphere around the leak area for toxic or combustible mixtures, using employee protective clothing and equipment, using motorized equipment with caution, and having fire extinguishers and first aid materials available.

   In addition to meeting the requirements of the Department of Transportation Regulations, the repair methods used on the leak must comply with the industry's recommended practice as contained in all American Petroleum Institute (API) Standards 1104, RP 1107, PSD 2200 and PSD 2201.

7. After the leak has been repaired the Control Center Operator would be notified, all blocked valves would be opened, and the pipeline refilled with liquid at a reduced rate. While the filling operation is being performed, the leak area would be observed to make sure a satisfactory repair has been made. The pipeline would be brought up to normal operating conditions gradually. While this is being done, continuous observations would be made at the leak site.

8. Complete reports would be made showing all data obtained during the leak detection and evaluation period, as well as from the on-the-ground supervisor. If a DOT report is required, the final preparation would be made in Tulsa based on the field staff's written report and the Control Center Operator's report.

9. A review of how the emergency was handled would be made upon completion of all activities to determine where and when improvements can be made.

Ruptures

Frequency of Occurrence

Pipeline ruptures are low frequency events. All natural gas liquid pipeline breaks which spill 5 or more barrels must be reported to the DOT. A compilation of these reports revealed that during the year 1978, 255 such breaks occurred. For 1977, the number was 238 breaks in a total of 376,160 miles of liquid pipelines (DOT, 1978, 1980; AOPL, 1979). These figures indicate that in the United States in 1977, the ratio of number of ruptures to 1 mile of liquid pipeline is .0006. The equivalent figure for products lines (like that proposed by MAPCO) is even less at .0004 (given 81,296 miles and 30 ruptures). In 1978, there were 32 such breaks of which one resulted from external corrosion and none resulted from internal corrosion (DOT, 1980). The balance of breaks was caused by forces external to operator control, for example, other operator equipment rupturing the pipe.

Initiated in 1960, MAPCO's pipeline system (6300 miles at the beginning of 1979) has maintained a similar record of infrequent ruptures. During the 18 years from 1960-1978, MAPCO reported the total operating risk exposure had been 664,166,000 pipeline mile-hours. Of this total, 876 pipeline mile-hours had a hazardous condition. Consequently, for every hazardous mile-hour, there were 758,180 non-hazardous mile-hours (Rohleder, 1979a).

Procedures for a Major Rupture

In the event of a major break in the pipeline, the lighter hydrocarbons such as ethane, propane, and iso-butane would vaporize under normal atmospheric conditions. The behavior

of these substances in the atmosphere would be strongly dependent on existing meteorological conditions such as wind speed, termperature and stability. Generally, a period of 12 hours is required to dissipate the volume of product between gate valves. The natural gasoline and normal butane contained in the mixed stream would vaporize very slowly, especially at temperatures below 32°F. In this case they would remain in a liquid state and must be contained in the area of the break site by the construction of dikes. The pooled liquid within the dike would be removed by tank trucks, the pipeline repaired, and area restoration begun within a period of about 72 hours after the time of the break. Saturation of the soil by natural gasoline or normal butane would be confined to no more than an acre of land. To avoid damage to the soils, the saturated soils would be turned or replaced as necessary during cleanup. If vegetation is damaged during a spill, it would be reseeded as required by the surface owner.

Depending on the atmospheric conditions and the surrounding terrain (including improvements), the vapor stream from a break may be intentionally set on fire; in such an event there would be no saturation of the soil by any liquids.

The worst-case for reduction of air quality would occur when the wind velocity was near zero and very stable. In this situation, a vapor cloud with a high concentration of hydrocarbons would extend downward along the ground. The extent of this cloud would be concentrated near the source of supply or rupture of the pipeline and would be confined to the areas of less than 1/2 mile in length and 1/4 mile in width. Increased wind velocities and instability would decrease concentrations by diluting the cloud. The vertical extent of the cloud under these conditions would be expected to be less than 250 feet and to extend less than 1/2 mile.

Although the chance of such an occurrence is very remote (the applicant has never had this case occur), the worst case of contamination to be caused by a break would be one in the bed of a stream when the temperature is 32°F or below (Rohleder, 1979b). Precautions against such a rupture would include the use of heavier walled pipe at river crossings. In such a case, the natural gasoline would float on top of the water and make it necessary to construct a coffer dam (or other appropriate containment structure) downstream to contain the product until it could be pumped into a tank truck. Valves are sited at river crossings to be accessible during flood conditions.

Construction and Maintenance

During construction or maintenance, all spills of any oil materials causing a sheen, sludge or emulsion on surface, bottom or shore line, which reach waters of the United States would be immediately reported to the National Response Center or the appropriate EPA Regional office.

ALTERNATIVES

Eighteen potential alternatives to the proposed action[a] were identified and considered in a screening process to select those for detailed analysis of impacts.

Identification of Alternatives

The 18 alternatives were identified throughout several months of initial information collection and the scoping process for the proposed action. Table 1-9 lists the alternatives in two general categories. One category of alternatives consists of different route segments and variations to the proposed route. The other category of alternatives consists of actions substantially different from those of the proposed action. This latter category includes different destinations for the liquid hydrocarbons, as well as no action and delay of project alternatives.

The major means by which the alternatives were identified were agency contacts and the scoping process. These interactive means were

[a] The proposed action, presented earlier in Chapter One, represents a slightly revised route from the one presented by the applicant at the time the original application was made. The revisions were based on early information obtained during the scoping process as discussed in Chapter Four.

Table 1-9. IDENTIFIED ALTERNATIVES TO THE PROPOSED ACTION

Alternative Routes

1. Follow existing Northwest Pipeline through Arches National Park.
2. Skirt the west and north boundaries of Arches National Park via the shortest possible route.
3. [a] Follow existing Northwest Pipeline over Douglas Pass.
4. Go east of Dinosaur National Monument in Colorado then back into Utah using a route near Cottonwood Mountain.
5. Go east of Dinosaur National Monument in Colorado then head north into Wyoming using a route near Highway 430.
6. Go west of Dinosaur National Monument in Utah then head north to Wyoming using Willow Creek.
7. Follow existing Northwest Pipeline all the way from west of Dinosaur National Monument across Flaming Gorge Reservoir in the National Recreation Area, Ashley Forest, into southwestern Wyoming. This route would depart from the proposed action at Diamond Mountain (MP 801), cross Green River at Little Hole, and head to Dutch John before crossing the reservoir.
8. [a] Follow existing Northwest Pipeline to Little Hole then head north over Goslin Mountain, Little Mountain, and east of Sheep Mountain.
9. Follow existing Northwest Pipeline to Little Hole then head north over Goslin Mountain, through Richard's Gap to east of Little Mountain. This route would then follow Highway 373 north.
10. [a] Follow the proposed route through Rye Grass and Jesse Ewing canyons. Depart the proposed route at the north end of Jesse Ewing Canyon heading northeast near Clay Basin Creek and over Pine Mountain to Titsworth Gap.

Other Alternatives

11. Build local facilities for storage and later disposition of the liquid hydrocarbons, or for reinjection into the natural gas stream.
12. Build local fractionating facilities to decompose the liquid hydrocarbons for distribution elsewhere.
13. Transport the mixed stream to destinations other than Hobbs Station, Texas. This action implies the possible construction of one or more pipelines.
14. Transport the liquid hydrocarbons by other transportation modes (i.e., trucks and/or railroads).
15. Construct a pipeline to Hobbs Station by routes not herein evaluated, for instance, heading east to Cheyenne then heading south along highways in the Front Range of Colorado and New Mexico to Hobbs Station.
16. Partial implementation of the proposed action.
17. [a] Take no action. No action is defined as BLM's not issuing the grant to MAPCO to construct and operate its proposed action.
18. [a] Delay the project. This action is defined as BLM's not issuing the grant to MAPCO to construct their proposed action in 1980.

[a] Selected for detailed analysis.

supplemented by professional experience and the judgment of the preparers and contributors (see Chapter Four).

Screening

Once alternatives were identified and discussed, a screening procedure was developed to select the reasonable alternatives to the proposed action for detailed impact analysis.

Three criteria were used as a basis for screening alternatives. The judgements regarding whether or not the criteria were met were based on professional experience and information obtained in the scoping process which is outlined in Chapter Four. Table 1-10 defines the alternatives considered and identifies the criteria by which those screened out were eliminated from detailed analysis. The first criterion was:

1. The alternative does not provide a reasonable alternative to the proposed action. Alternatives which did not provide for delivery of the liquid hydrocarbons to Hobbs Station in Texas were screened from detailed analysis because the goals of the proposed action would not have been achieved. Alternative delivery points were judged as not providing a reasonable alternative to the proposed action. The same determination was made for those alternatives which did not provide for the pick-up of the liquid hydrocarbons from the various processing plants along the proposed route. The types of alternatives mentioned above were screened from further consideration and from detailed analysis, regardless of the merit of the alternative as a different means of disposing of the liquid hydrocarbons. Examples of these alternatives are: (a) constructing a pipeline(s) to Hobbs Station by way of routes different from those herein evaluated, such as a route east of the Rockies; (b) building of local storage facilities for later disposion; (c) building of local fractionating facilities to fractionate the products for distribution elsewhere; (d) reinjecting the liquid hydrocarbons back into the natural gas stream; (e) transporting the mixed stream to destinations other than Hobbs Station in Texas; (f) transporting the products by other modes (railroad and/or trucks).

The balance of alternatives considered during the screening process were comprised of various segmental re-routing alternatives, and the No Action and Delay of Project alternatives. Two additional criteria were developed for screening these from further consideration and detailed analysis:

2. The alternative does not provide a route which would clearly not conflict with nationally recognized single use purposes, such as a National Park or National Monument. For instance, one alternative route considered would follow the existing Northwest pipeline through Arches National Park near Moab, Utah. This alternative was screened from further consideration as clearly conflicting with a nationally recognized public decision to preserve the National Park for single use purposes. The alternative was screened, despite the fact that it would have reduced the cost of construction by at least one million dollars.

3. The alternative does not provide a route which is clearly better than the proposed action in terms of fewer adverse environmental impacts. The alternative was dropped from further consideration and detailed analysis if it was not clearly better than the proposed action. Alternatives screened from detailed analysis are shown in Maps 1-3 and 1-4. A summary of information on which decisions to screen were based is given below for alternatives eliminated from further analysis on criterion three.

Skirt Arches National Park

This alternative was proposed because it was the shortest distance between Highway 160 and Highway 50 and 6. However, it was eliminated as it did not follow an existing ROW, and a reasonable option was available which did.

East of Dinosaur National Monument (Cottonwood Mountain and Highway 430)

Numerous and difficult resource conflicts were identified and confirmed for the route.

Table 1-10. SUMMARY OF SCREENING DECISIONS FOR ALTERNATIVES

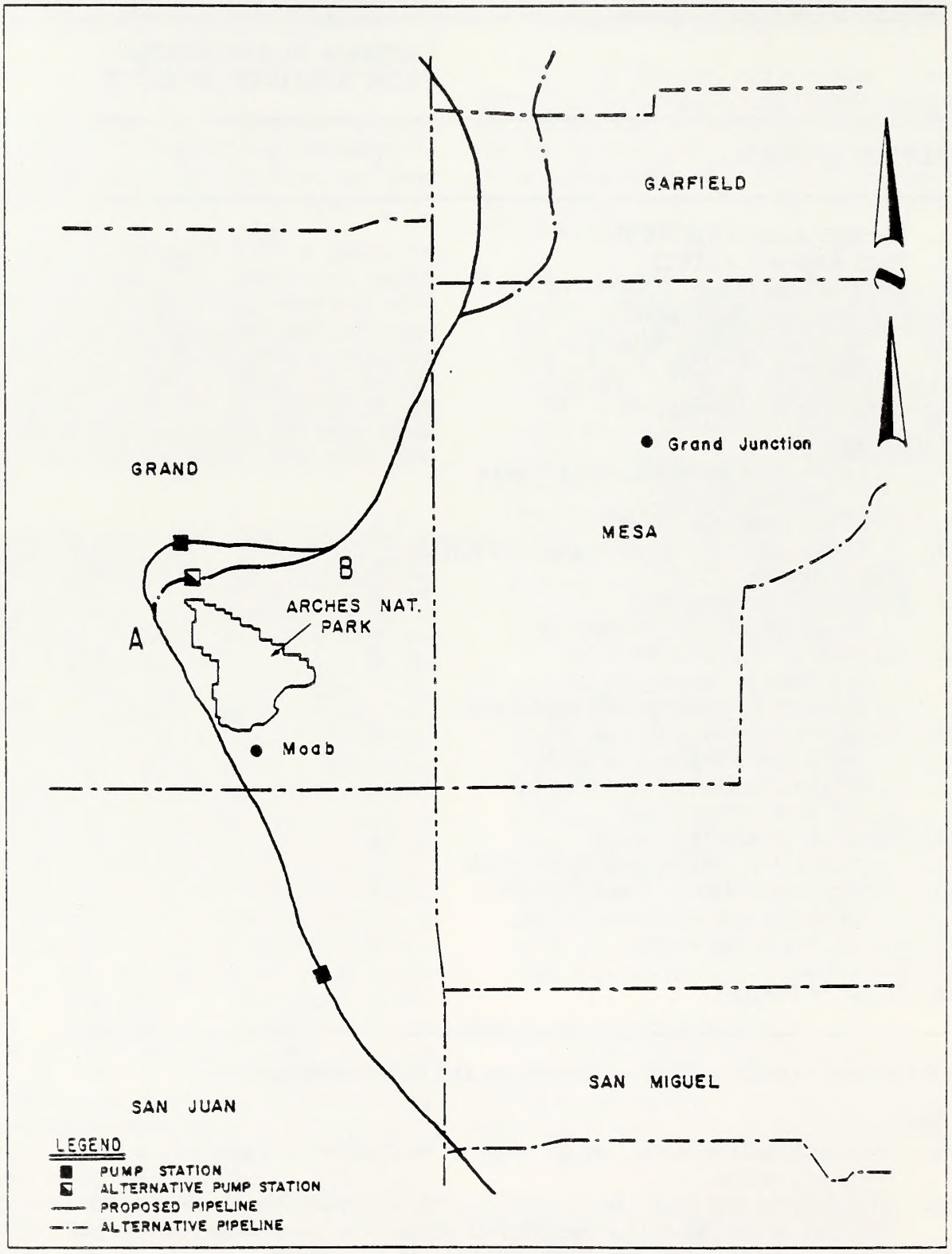
ALTERNATIVES	CRITERIA FOR SCREENING FROM DETAILED ANALYSIS		
	1[a]	2	3
1. Through Arches N.P. (UT)		X	
[b] 2. Skirt Arches N.P. (UT)			X
[b] 3. Douglas Pass (CO)			
East of Dinosaur N.M. (CO)			
4. Cottonwood Mountain (UT)			X
5. Highway 430 (CO)			X
West of Dinosaur N.M.			
6. Willow Creek (UT)			X
Little Hole			
7. Dutch John (across Flaming Gorge Reservoir) (WY)			X
[b] 8. Little Mountain (UT,WY)			
9. Goslin Mountain Richard's Gap (UT,WY)			X
[b] 10. Pine Mountain (UT,WY)			
11. Building of local storage facilities for later disposition.	X		
12. Building of local fractionation facilities to decompose the products for distribution elsewhere.	X		
13. Transport the mixed stream to destinations other than Hobbs Station, Texas (construction of one or more pipelines).	X		
14. Transport products by other modes (i.e., trucks and/or railroad).	X		
15. Construct pipeline to Hobbs Station by routes not herein evaluated.	X		
[b] 16. Partial implementation.	X		
[b] 17. No Action			
[b] 18. Delay of Project			

X = Screened from further consideration and detailed analysis.

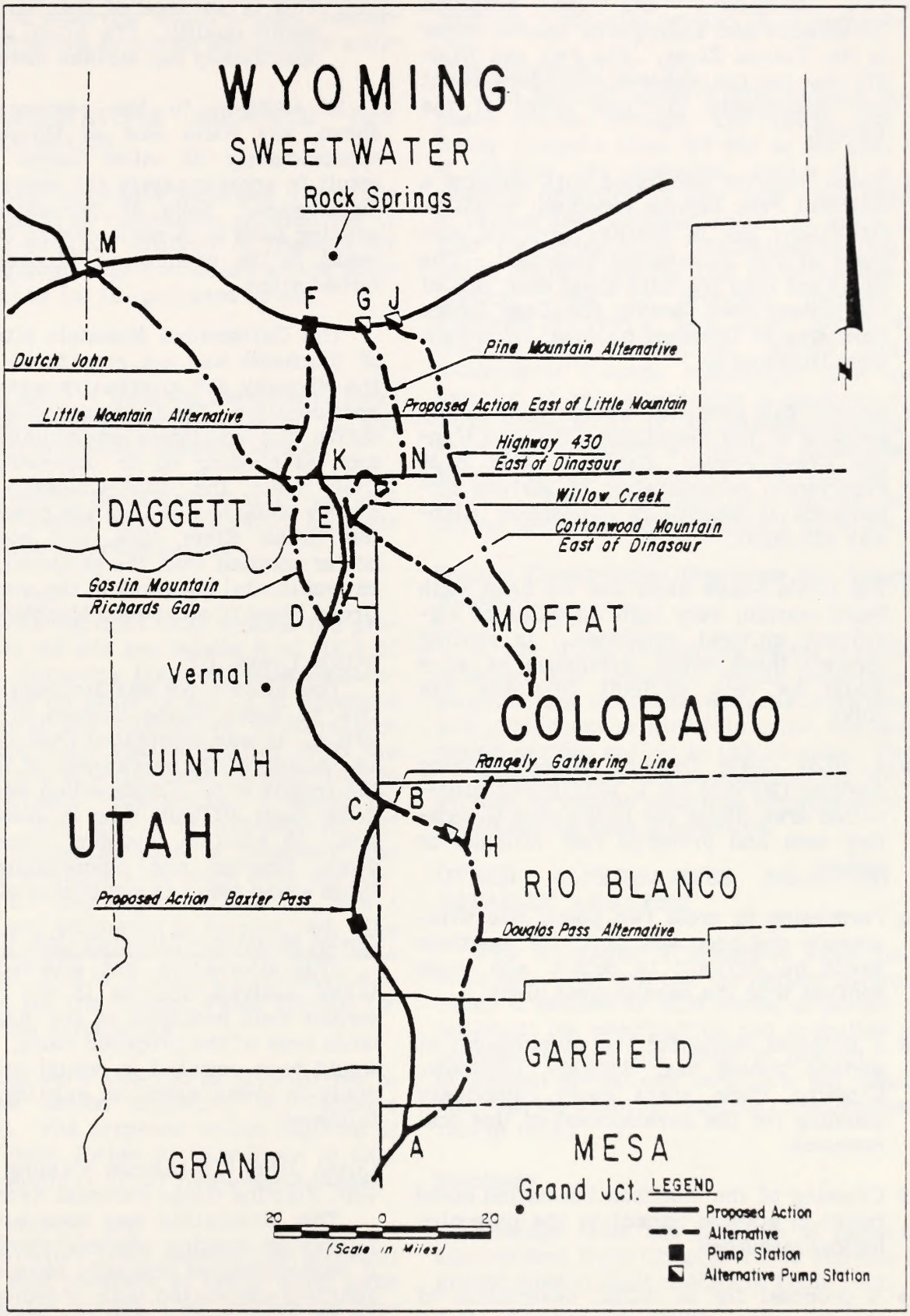
[a] KEY

1. The alternative does not provide a reasonable alternative to the proposed action.
2. The alternative does not provide a route which would clearly not conflict with nationally recognized single use purposes, such as a National Park or National Monument.
3. The alternative does not provide a route which is clearly better than the proposed action in terms of fewer adverse environmental impacts.

[b] Selected for detailed analysis.



Map 1-3. ALTERNATIVE ROUTE CONSIDERED UNDER SCREENING CRITERION THREE (NEAR ARCHES NAT. PARK)



Map 1-4. ALTERNATIVE ROUTES CONSIDERED UNDER SCREENING CRITERION THREE, TRI-STATE AREA

- Two designated and one proposed Threatened and Endangered species occur in the Yampa River. The Fish and Wildlife Service has expressed concern about any disturbance to these areas of the Yampa.

- Visual impacts associated with crossing a National Park Service easement would be significant and in conflict with the purposes of the BLM-issued easement. The easement runs 1/4 mile along each side of the access road serving the Deer Lodge Park area of Dinosaur National Monument from Highway 40.

- Severe soils problems would occur in any crossing of the Vermillion Cliff and Canyon Creek areas. Based on past BLM experience, rehabilitation of surface disturbance is essentially impossible (Highway 430 only).

- The Little Snake River and the Sand Wash Basin contain very high densities of significant cultural resources. In routing through these areas, avoidance of sites would be very difficult (Highway 430 only).

- A BLM Craig District office planning decision (MFP-3) for a Wild Horse distribution area limits use in the area to existing uses and prohibits new utilities or access.

- Permission to cross two power site withdrawals and proposed dam site locations would be difficult to obtain, and could conflict with the development plans.

- A proposal exists for the development of surface mining near Rangely, Colorado. Crossing these areas could complicate planning for the development of this coal resource.

- Crossing of the Morrison Formation could result in adverse impact to the paleontological resources.

- A proposal for an ACEC designation of the Vermilion Cliffs is currently being considered (BLM Craig District Office). This is an area of fragile soils and high scenic quality. The ACEC proposal would specifically ban surface disturbance.

In addition to the resources mentioned above, any route east of Dinosaur would be approximately 30 miles longer which would result in approximately 180 acres of additional disturbance. Only 35 percent would follow existing ROW's. A route east of Dinosaur would result in the opening up of previously undisturbed areas.

The Cottonwood Mountain alternative (East of Dinosaur) was not considered further after the Highway 430 alternative was dropped from consideration. The Cottonwood Mountain alternative had additional environmental concerns, such as opening up or improving access into Utah from the Utah-Colorado border, not clearly being better than the proposed action in the Green River area, and not providing a better solution than the proposed action to the environmental concerns in the area north of the Green River (Cottonwood Mountain only).

Willow Creek, UT

This alternative was proposed as an alternative to Jesse Ewing Canyon in the proposed action. It was eliminated from detailed analysis because of the narrowness of the canyon and the fragile soils. Construction was identified as being more difficult than in Jesse Ewing Canyon. In addition, crossing rim-rock outcroppings, riparian and piñon-juniper vegetation types would result in significant visual impacts.

Goslin Mountan - Richard's Gap, UT

This alternative was eliminated from detailed analysis because it did not avoid the serious soils problems in the Red Creek Badlands area of the proposed route. In addition, it would have resulted in visual problems, especially in areas where no existing corridors are followed.

Dutch John, UT (Across Flaming Gorge Reservoir, Flaming Gorge National Recreation Area)

This alternative was considered because it follows an existing pipeline corridor; however, it was eliminated primarily because of resource conflicts associated with crossing a wide span of Flaming Gorge National Recreation Area. The terrain makes mitigation difficult, as is

evident with the existing line. In addition, the crossing of the reservoir would present technical and construction problems and involve additional length.

ROUTE ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

Three route segments emerged from the screening process as reasonable alternatives to the proposed action. Analysis of impacts for the three segments was conducted at the same level of detail as for the proposed action.

Locations

Maps 1-5 and 1-6 indicate the general locations of the alternatives, while Maps 12, 13, and 14 in Appendix A identify specific locales.

One alternative was selected as an optional route to the 74-mile Baxter Pass (AC) segment (Map 1-6) of the proposed action.

Douglas Pass, CO

This 72-mile segment (AB) departs the proposed route at MP 688 and rejoins it at MP 6 of the Rangely Gathering Line. Its specific location is depicted on Maps 12 and 13 in Appendix A. Selection of this alternative would require relocating one pump station location from the Dragon (UT) site to a site near Rangely (CO) in Rio Blanco County (Section 28, Township 1S, Range 101W. See Map 13 of Appendix A). If this pump station location is selected, the power source would be 1/10 miles from the site. Size of the KV line would be 14.4 KV, and 3 power poles are estimated to be required. The telephone line source would be one-half mile from the site. This is in lieu of microwave station required for the Dragon Pump Station for the Baxter Pass Alternative .

Two routes were selected as alternatives to the proposed action beginning at Diamond Mountain (D). The proposed action segment is Rye Grass - Jesse Ewing to Clay Basin to East of Little Mountain (DEF on Map 1-6, 63 miles).

Little Mountain, UT, WY

This alternative (DF) departs the proposed route at MP 800, proceeds to Little Hole, turns north over Little Mountain and rejoins the proposed action at MP 863 (56 miles). Its specific location is depicted on Map 14 in Appendix A.

Pine Mountain, UT, WY

This 68-mile route (DEG) follows the proposed action through Rye Grass and Jesse Ewing Canyons from MP 800 to MP 828, where it departs the proposed action in a north easterly direction to and over Pine Mountain. It rejoins the proposed action at MP 7 of the East Gathering Line. Selection of this route would require moving the Rock Springs Pump Station from its proposed location near Highway 373 to a site near South Baxter (Section 16, Township 16, Range 104W in Sweetwater County, Wyoming). The specific location of this alternative is depicted on Map 14 in Appendix A. If this alternative were to be selected, the power source is 5 miles away and would require a 14.4 KV line and 89 power poles. The communication source for the buried telephone line would be 5 miles away.

Special Construction Practices for Alternative Routes

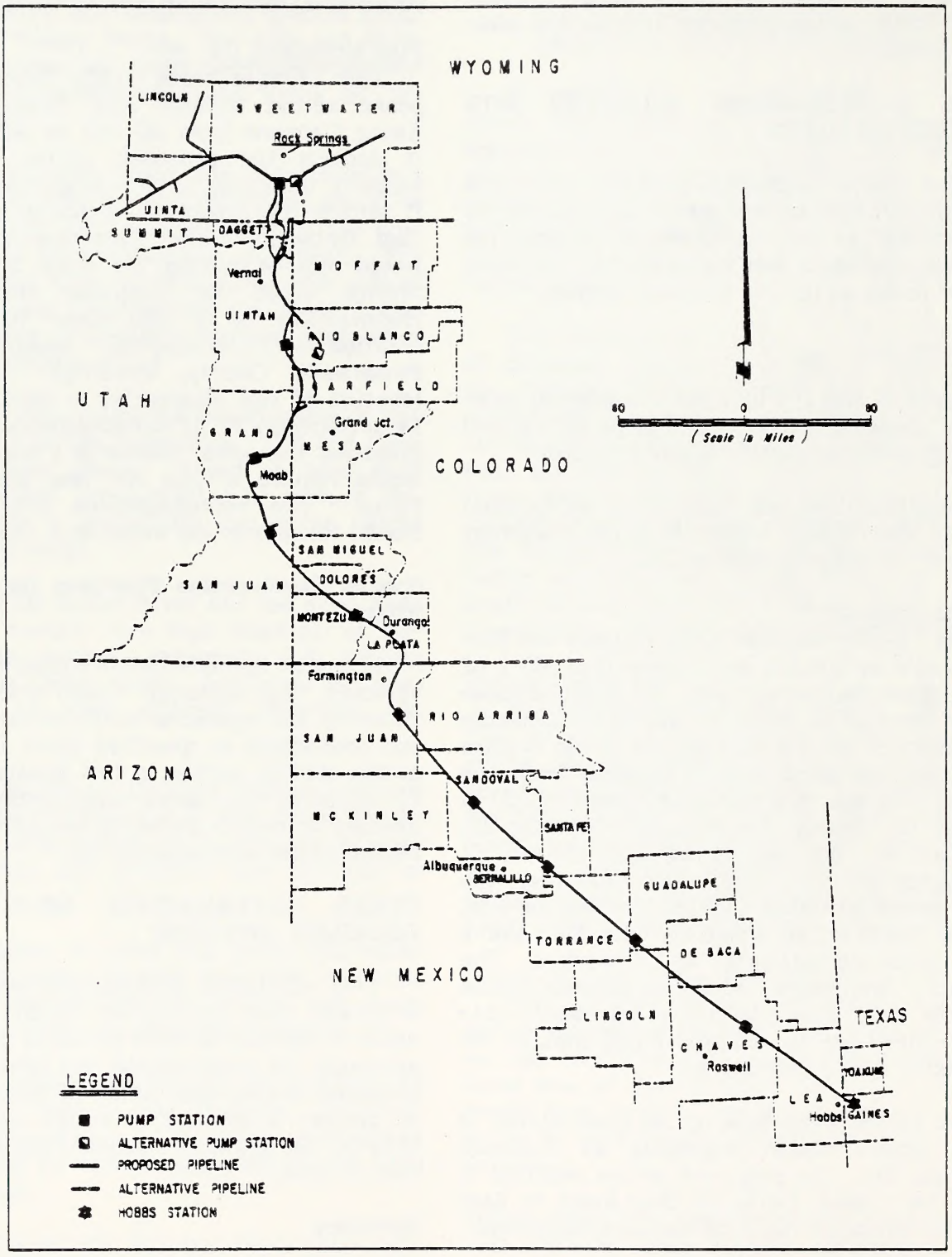
If any of the alternative routes is ultimately selected, the applicant would undertake construction and operation with the same practices and procedures as specified under the proposed action section earlier in this chapter. Table 1-11 specifies the dates construction would be avoided to reduce potential impacts to wildlife resources for each alternative.

OTHER ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

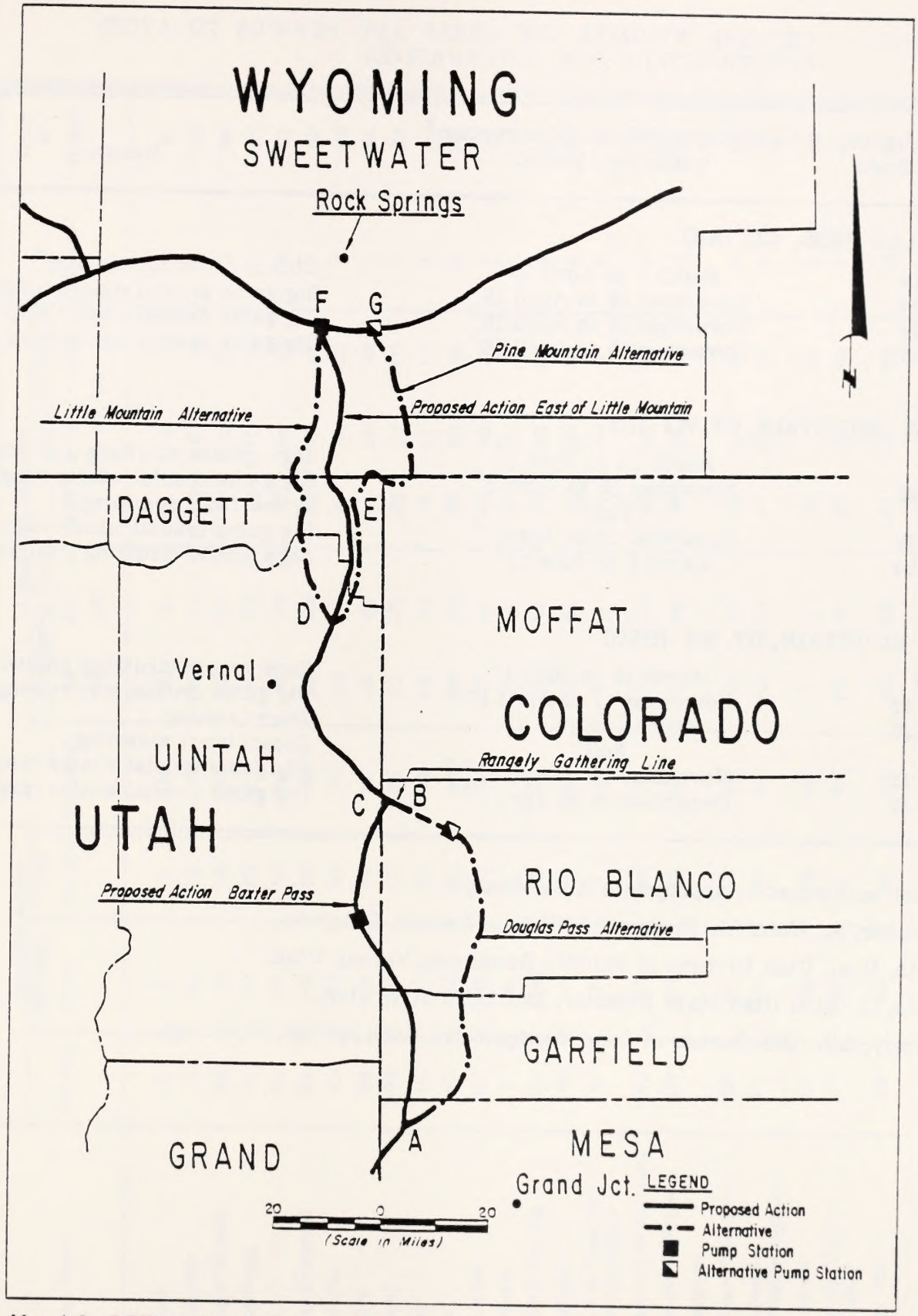
Two additional alternatives were analyzed in detail. They are the "no action" alternative, which is defined as BLM denial of permit to the applicant for construction and operation of the proposed action, and "delay of project." Delay of project is defined as BLM's not issuing to MAPCO the grant to construct the proposed action in 1980.

Summary

Findings from the analyses of impacts are summarized from Chapter Three and the background files at BLM, NMSO in Table 1-12.



Map 1-5. GENERAL LOCATION OF PROPOSED ACTION AND ALTERNATIVE ROUTES



Map 1-6. DETAILED LOCATIONS OF ALTERNATIVE ROUTES

Table 1-11. CRUCIAL WILDLIFE USE AREAS AND PERIODS TO AVOID CONSTRUCTION FOR ALTERNATIVES

Approximate Mile Posts	Dates During Which Construction[a] Would Be Avoided	Reason
DOUGLAS PASS, CO (AB)		
12 to 14	March 1 to April 30[b]	Chukar breeding complex
15 to 24	November 15 to April 30[b]	Big game crucial winter range
32 to 34	November 15 to April 30[b]	Big game crucial winter range
40 to 49	November 15 to April 30[b]	Big game crucial winter range
LITTLE MOUNTAIN, UT, WY (DF)		
0 to 4	March 15 to June 1[c]	Sage grouse strutting grounds
11 to 22	November 15 to April 1[c]	Big game crucial winter range
22	Fall[d]	Brown trout spawning
29 to 49	December 15 to April 1[e]	Big game crucial winter range
50 to 54	March 1 to June 15[e]	Sage grouse strutting grounds
PINE MOUNTAIN, UT, WY (DEG)		
0 to 4	March 15 to June 1[c]	Sage grouse strutting grounds
12 to 42	November 15 to April 1[c]	Big game crucial winter range
14 to 20	May 15 to July 1[d]	Deer fawning
22	Fall[d]	Brown trout spawning
30 to 42	November 15 to April 1[c,e]	Big game crucial winter range
46 to 49	December 15 to April 1[e]	Big game crucial winter range

[a]Unless authorized by appropriate Area Manager.

[b]Whitaker, A. Colorado Division of Wildlife, Denver, Colorado.

[c]Smith, D.A. Utah Division of Wildlife Resources, Vernal, Utah.

[d]Wicks, G. BLM Utah State Director, Salt Lake City, Utah.

[e]Haverly, S.J. U.S. Bureau of Land Management, Rock Springs, Wyoming.

Table 1-12. SUMMARY OF SIGNIFICANT IMPACTS FOR PROPOSED ACTION AND ALTERNATIVES

Impact Topics	Proposed Action				Alternative Segments					No Action	Delay of Project
					Comparison One		Comparison Two				
	Mainline	Gathering Lines	Pump Stations	Operation	AB CO	AC[a] CO	DEF[a]	DF	DEG		
							All in UT, WY				
Climate	0	0	0	0	0	0	0	0	0	0	0
Air Quality	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Geologic Hazards	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Paleontology	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)	0	(?)
Soils	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Water Resources	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Vegetation	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Wildlife	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Cultural	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)	0	(?)
Visual	(-)	(-)	NS	NS	(-)	(-)	(-)	(-)	(-)	0	(-)
Noise	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Recreation	NS	NS	NS	0	NS	NS	NS	NS	NS	0	NS
Wilderness	0	0	0	0	0	0	0	0	0	0	0
Livestock Grazing	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Agriculture	NS	NS	0	NS	NS	NS	NS	NS	NS	0	NS
Land Use Controls and Constraints	0	0	0	0	0	0	0	0	0	0	0
Transportation Networks	NS	NS	NS	0	NS	NS	NS	NS	NS	0	NS
Social and Economic Conditions	(?)	(?)	NS	(+)	NS	NS	NS	NS	NS	(-)	(-)
100-Year Floodplains	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS
Threatened or Endangered Species	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)	0	(?)
Wild Horses	NS	NS	NS	NS	0	0	NS	0	NS	0	NS
Prime and Unique Farmland	NS	NS	0	NS	NS	NS	NS	NS	NS	0	NS
Energy Use	NS	NS	NS	(+)	NS	NS	NS	NS	NS	(-)	NS

[a]Proposed Action Key: (-) significant adverse impact, (NS) no significant impact, (+) significant beneficial impact, (?) = unknown significance, (0)=no impact.

MITIGATION NOT OTHERWISE INCLUDED IN THE PROPOSED ACTION

Mitigating measures were identified through impact analysis. Many of these were incorporated by the applicant in Chapter One as special construction practices or resource protection methods which would be implemented to help minimize adverse impacts. The following mitigating measures are proposed by the BLM in addition to those already incorporated into Chapter One.

Paleontology

Prior to construction, an inspection of areas along the ROW having a high probability of containing fossils of exceptional scientific value may be required in order to identify surface exposures of fossils. Identified surface exposures would be avoided or protected.

Soils

Erecting vehicle barriers may be required along the ROW in areas where the ROW is new (not paralleling existing ROW's) in order to facilitate reclamation in areas with sensitive soils.

Wildlife

1. In order to avoid the potential impact of opening new access into crucial wildlife areas such as Rye-Grass Draw (MP 812-820), the Authorized Officer may require the construction of vehicle barriers where deemed necessary.

2. Mitigation of adverse impacts to riparian habitat and aquatic life at stream crossings may be required on a case-by-case basis by the Authorized Officer. Such measures may include: (a) special revegetative measures on the stream bank for bank stabilization and habitat restoration; (b) diversion of flows around the construction area; (c) setting the construction staging areas away from the stream bank; (d) minimizing the use of heavy equipment in the stream bed; or (e) seasonal restrictions during crucial spawning periods.

3. Revegetation of the ROW with plant species that are beneficial to wildlife in the area may be required to minimize the effect of removing valuable summer or winter forage.

Visual Resources

Within narrow areas of canyons, such as Kane Springs, Utah, and Moab Canyon, Utah, replacement of large rocks and boulders in the ROW may be required to help minimize visual contrasts.

CHAPTER TWO
AFFECTED ENVIRONMENT

Impacts from the proposed action and alternatives were analyzed for all of the following resources:

- Climate
- Air Quality
- Geology (geologic hazards)
- Mineral Resources
- Paleontology
- Soils
- Water Resources
- Vegetation
- Wildlife
- Cultural Resources
- Visual Resources
- Noise
- Land Uses
  - Agriculture
  - Forests
  - Livestock Grazing
  - Recreation
  - Wilderness
- Land Use Controls and Constraints
- Transportation Networks
- Social and Economic Conditions

Resource topics for which significant impacts were determined from analysis are included in this document. Criteria by which significant impacts were determined are presented for all resources in the introduction to Chapter Three.

Several other resource topics are included in the document in response to specific requirements. These are 100-year Floodplains, Wilderness Resources (including FS RARE II Areas), Prime and Unique Farmlands, and Land Use Controls and Constraints.

Background information and analyses of impacts for all resources are on file at BLM, NMSO. Baseline data presented in this Chapter reflect those resources for which significant impacts are anticipated, and the four additional topics discussed above.

PROPOSED ACTION

Paleontology

Vertebrate fossils of birds, mammals, reptiles and amphibians are reported from formations of various ages in the pipeline region. Early tertiary basins, particularly the San Juan and Green River basins, are noted for their content and preservation of fossils of mammals, reptiles, birds, plants, insects, and fish. Fossil localities of particular importance in the region include Dinosaur National Monument and Fossil Butte National Monument.

Potential fossil resource areas have been identified in the Nacimiento formation near Kutz Canyon between mileposts 410 and 416, and in the Wasatch and Green River formations. These and other formations along the proposed pipeline that are known to contain significant fossil localities are shown on Table 2-1.

Wildlife

Known crucial wildlife use areas have been identified in Chapter One (Table 1-8, Crucial Wildlife Use Areas and Periods to Avoid Construction of Proposed Action).

Threatened or Endangered Wildlife and Plant Species

As provided by 50 CFR 402 (Interagency Cooperation - Endangered Species Act [ESA] of 1973), the Fish and Wildlife Service (FWS) is required to furnish, at BLM's request, a list of those species, both proposed and listed, that may be or are present in the area involving a federal action.

Upon receipt of the FWS species list, the BLM is required to conduct a biological assessment for the purpose of determining whether those species may be affected by the proposed action. Proposed species are included on the

Table 2-1. FORMATIONS AND NUMBER OF MILES ALONG THE PROPOSED ACTION HAVING POTENTIAL PALEONTOLOGICAL RESOURCES

Formation	Miles
Chinle	3
Morrison	28
Fruitland	8
Animas	8
Nacimiento, Ojo Alamo	86
San Jose	19
Cutler	6
Wasatch	131
Green River	73
Uinta	11
Bridger	63
Total	436

list even though they do not have legal protection under the Act. Their inclusion recognizes that they may be listed at any time and if not considered, they would represent a potential source of future delays or modifications to the proposed action. In light of this, a biological assessment will also be conducted on those species proposed for federal listing.

The biological assessment will be completed within 180 days after receipt of the species list, unless it is mutually agreed to extend this period. The biological assessment should include 1) the results of a comprehensive information survey, 2) results of any studies undertaken to determine the nature and extent of any impacts on identified species, 3) consideration of the cumulative effects upon the species or its critical habitat, 4) study methods used, 5) difficulties encountered in obtaining data and completing the proposed study, 6) conclusions including recommendations as to further studies, and 7) any other relevant information. In essence, the biological assessment is synonymous to the impact analysis conducted on any other resource which may be impacted by the proposed action. If the findings of the biological assessments indicate that a listed species may be affected by the proposed action, the BLM is required to formally request consultation with the FWS.

The list has been requested and received (November 16, 1979) for the proposed action. The FWS list response includes the species listed in Table 2-2.

It is BLM policy that only state-listed and legislatively protected Threatened and Endangered species categories be given consideration equal to federal-listed Threatened and Endangered species. These state-listed species are provided in Table 2-3. Utah and Wyoming do not have lists in this status. Furthermore, the species on the lists for Colorado and Texas do not coincide with areas affected by the proposed action.

Cultural Resources

About 341 recorded sites are known to exist within the 20-mile wide study corridor. This number reflects known sites rather than the actual density of prehistoric and historic occupation of the area. Of these known sites, 43 are in or known to be eligible for inclusion in the National Register of Historic Places, as given in Table 2-4.

Prior to construction, an inventory was conducted in 1972 along sections of the existing MAPCO right-of-way in New Mexico. Sites that were located were avoided and two were excavated. As a result of this inventory, there are 77 known sites within the study corridor in New Mexico. In addition, during the fall of 1979, 80 miles of inventory was conducted in other areas of the proposed route, which located 20 sites. The inventory would be completed prior to construction in accordance with the Memorandum of Agreement being developed for the project by the Bureau of Land Management, the Advisory Council on Historic Preservation, and appropriate State Historic Preservation Officers.

Major prehistoric and historic periods which may be represented in the study corridor are listed below and described in the following discussion.

Prehistoric
- Paleoindian: 11,000 - 6000 B.C.
- Archaic: 6000 B.C. - A.D. 450
- Formative: A.D. 450 - 1450
  - Southwest
  - Great Basin
  - Plains/Plateau
- Shoshonean - Athabascan Period: A.D. 1300 - Present

Historic
- Spanish Exploration and Settlement
- Fur Trade
- Westward Migration
- Settlement and Development

Paleoindian Period (11,000-6000 B.C.)

The Paleoindian Period, dating from late glacial and early post-glacial times, was predominantly a hunting stage exploiting large migratory herbivores. These hunters also utilized and exploited available vegetal resources. Social structure probably consisted of the nuclear family organized into highly mobile nomadic bands.

Table 2-2. FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES FOR PROPOSED ACTION AND ALTERNATIVES

Species		States			
	Status[a]	New Mexico	Colorado	Utah	Wyoming
WILDLIFE					
Black-footed ferret	E	X	X	X	X
Bald eagle	E	X	X	X	X
Peregrine falcon	E	X	X	X	X
Whooping crane	E	X			X
Colorado squawfish	E	X	X	X	
Humpback chub	E		X	X	X
Razorback sucker	P	X			
Pecos gambusia	E	X			
PLANTS					
Sclerocactus mesae-verdae	T	X	X		
Echinocereus kuenzleri	E	X			
Pediocactus knowltonii	E	X	X		
Sclerocactus glaucus	T		X	X	

[a]E = Endangered, P = Proposed and T = Threatened

Table 2-3. LEGISLATIVELY STATE-LISTED THREATENED OR ENDANGERED SPECIES POSSIBLY OCCURRING ALONG OR NEAR THE PROPOSED ACTION

Species[a]	Classification[b]	State
Mink	E	NM
Olivaceous cormorant	E	NM
Mississippi kite	E	NM
Aplomado falcon	E	NM
(Interior) least tern	E	NM
Broad-billed hummingbird	E	NM
Red-headed woodpecker	E	NM
Bell's vireo	E	NM
Baird's sparrow	E	NM
McCown's longspur	E	NM
(Texas) slider turtle	E	NM
(Sand dune) sagebrush lizard	E	NM
(Pecos) western ribbon snake	E	NM
(Eastern) barking frog	E	NM
(Blanchard's) cricket frog	E	NM
Mexican tetra	E	NM
Roundtail chub	E	NM
Silverband shiner	E	NM
Bluntnose shiner	E	NM
Silvery minnow	E	NM
Greenthroat darter	E	NM
Bigscale logperch	E	NM

[a]Includes only those species not already on the federal list.
[b]E = Endangered.

Sources:

Texas Parks and Wildlife Code. §§ 43.021 through 43.030, §§ 67.001 through 67.005, and §§ 68.001 through 68.021. Regulations for Taking, Possessing, Transporting, Exporting, Processing, Selling or Offering for Sale, or Shipping Endangered Species.

Hubbard, J.P., M.C. Conway, H. Campbell, G. Schmitt and M.D. Hatch. 1979. Handbook of Species Endangered in New Mexico. New Mexico Dept. of Game & Fish, Santa Fe. [Species treated based on Wildlife Conservation Act (§§ 17-2-37 through 17-2-56, NMSA 1978 and State Game Commission Regulation No. 563 with revisions through May 25, 1979). Current listings are now under Regulation No. 599.]

Colorado Wildlife Regulations, Chapter 10, Article II, Section 1002, approved January 18, 1979, by the Colorado Wildlife Commission.

Torres, John, et al. 1978. Essential Habitat for Threatened or Endangered Wildlife in Colorado. Denver: Division of Wildlife.

Table 2-4. SITES IN OR ELIGIBLE FOR INCLUSION IN THE NATIONAL REGISTER[a] WITHIN TEN MILES OF PROPOSED ACTION

Name of Site (State or Federal Number)	Location	Approximate Distance from Proposed Route	County
NEW MEXICO			
Aztec Ruins National Monument (PH0092142)	1 mi. N of Aztec	5 mi. W of MP 427	San Juan
Salmon Ruin (PH0092169G)	9 mi. E of Farmington	6 mi. W of MP 415	San Juan
Jemez Pueblo	28 mi. N of Bernalillo on NM 4	6.5 mi. NE of MP 302	Sandoval
Zia Pueblo	18 mi. W of Bernalillo	1 mi. NE of MP 297	Sandoval
Tamaya (Santa Ana Pueblo)	N of Bernalillo	1 mi. NE of MP 288	Sandoval
Kuana Ruin	N of Bernalillo off NM 44	near MP 285	Sandoval
Our Lady of Sorrows Church	U.S. 85, Bernalillo	4 mi. SW of MP 280	Sandoval
Sandia Cave	11 mi. E of Bernalillo in Cibola National Forest	4 mi. SW of MP 270	Sandoval
COLORADO[a,b]			
Collage Shelter[c] 52/05/0002	W side of Missouri Creek at West End Canyon	3 mi. E of MP 722	Rio Blanco
Whiskey Creek Trestle[c]	25 mi. SW of Rangely near junction of Whiskey and Evacuation Creeks	.5 mi. SW of MP 723	Rio Blanco
Sacred Mountain District[d]	NW of Cortez	SW of MP 490-530: 1 mi. SW of MP 524, 2 mi. SW of MP 497	Dolores and Montezuma
Lowry Ruin NHL[d] PH0087335	9 mi. W of Pleasant View	8 mi. SW of MP 520	Montezuma
Pigge Site[c]	5 mi. W of Pleasant View	6 mi. SW of MP 520	Montezuma
Hovenweep National Monument: Goodman Point PH0049221	NW of Cortez	9 mi. SW of MP 508	Montezuma
Escalante Ruin	2 mi. W of Dolores	.5 mi. NE of MP 503	Montezuma

[a] Federal Register, V. 44, N.26, February 6, 1979.

[b] Colorado Historical Society, "Colorado Inventory of Historic Sites", September 14, 1979.

[c] Pending nomination to National Register.

[d] NHL: National Historic Landmark.

[e] Utah Division of State History, "Antiquities Site Inventory", September 1979.

[f] Wyoming Recreation Commission," Wyoming Historic Preservation Plan", as amended August 24, 1979.

[g] Eligible for inclusion in the National Register.

Table 2-4. SITES IN OR ELIGIBLE FOR INCLUSION IN THE NATIONAL REGISTER[a] WITHIN TEN MILES OF PROPOSED ACTION (Continued)

Name of Site (State or Federal Number)	Location	Approximate Distance from Proposed Route	County
COLORADO[a,b] (continued)			
Anasazi Archaeological District	Dolores vicinity	Through district .5 mi. near MP 505	Montezuma
Mesa Verde National Park PH0087335	8 mi. E of Cortez on US 160	4 mi. SW of MP 492	Montezuma
Durango-Silverton Narrow-Gauge Railroad (NHL) PH0087203	Right-of-way between Durango-Silverton	S terminus 4 mi. N of MP 460	La Plata
Newman Block[c] 33/04/0026	801-813 Main Ave., Durango	5 mi. N of MP 460	La Plata
Rio Grande Southern Railroad (Colorado 33/04/0013, 17/05/0005 and 42/02/0008) State Register site	Durango to Dolores	0-1.5 mi. between MP 470 and 485, 6 intersections	Montezuma and La Plata
UTAH[a,e]			
Doc Parson's Cabin Complex	Brown's Park near mouth of Sears Creek at junction of Green River	.5 mi. W of MP 822	Daggett
Alhambra State Stage Stop and Ferry[c]	12 mi. SSE of Vernal on S bank of Green River	8 mi. SW of MP 782	Uintah
Orlando W. Warner House	Mill Creek Road, Moab	1 mi. NE of MP 600	Grand
Courthouse Wash Pictographs	1 mi. NW of Moab in Arches National Monument on UT 163	.5 mi. E of MP 603	Grand
Elk Mountain Mission Fort Site	NW of Moab off US 160	1 mi. E of MP 603	Grand
Wolfe Ranch (Turnbow Cabin)	13.5 mi. N of Arches National Monument Visitor Center	9 mi. NE of MP 612	Grand

[a] Federal Register, V. 44, N.26, February 6, 1979.

[b] Colorado Historical Society, "Colorado Inventory of Historic Sites", September 14, 1979.

[c] Pending nomination to National Register.

[d] NHL: National Historic Landmark.

[e] Utah Division of State History, "Antiquities Site Inventory", September 1979.

[f] Wyoming Recreation Commission," Wyoming Historic Preservation Plan", as amended August 24, 1979.

[g] Eligible for inclusion in the National Register.

Table 2-4. SITES IN OR ELIGIBLE FOR INCLUSION IN THE NATIONAL REGISTER[a] WITHIN TEN MILES OF PROPOSED ACTION (Concluded)

Name of Site (State or Federal Number)	Location	Approximate Distance from Proposed Route	County
WYOMING[a,f]			
Black Buttes Stage Station, Black Buttes Mine Project	Point of Rocks vicinity	4.5 mi. NW of MP 36 (E leg)	Sweetwater
Hallville Townsite and Mine	Point of Rocks vicinity	10 mi. NW of MP 37 (E leg)	Sweetwater
Gibralter Township and - Mine	Point of Rocks vicinity	3 miles NW of MP 40-45 (E leg)	Sweetwater
Expedition Island NHL[d] (PH0069655)	S of Union Pacific R.R. Bridge, near E bank of Green River	(across river) 3 mi. NE of MP 17 (W leg)	Sweetwater
Granger Stage Station (PH00696636)	Granger	2 mi. N of MP 45 (W leg)	Sweetwater
Fort Bridger (PH0069736G)	Fort Bridger, on Blacks Fork, Green River	2 mi. SSE of MP 72 (W leg)	Uintah
Bridger Antelope Trap	Evanston vicinity	6 mi. NE of MP 9 (NW lateral)	Uintah
Piedmont Charcoal Kilns (PH0069744G)	14 mi. NE of Hilliard	1.5 mi. ESE of MP 87 (W leg)	Lincoln
Cumberland (Camp Muddy)	10 mi. S of Kemmerer	9 mi. WSW of MP 23 (N leg)	Lincoln
J.C. Penney Historic District	J.C. Penney Ave. and S Main St., Kemmerer	10 mi. NW of MP 23 (N leg)	Lincoln
J.C. Penney House (NHL)	Railroad Park, Kemmerer	10 mi NW of MP 23 (N leg)	Lincoln
Johnston Scout Rocks	NE of Kemmerer	8 mi W of MP 40 (N leg)	Lincoln
Emigrant Springs	20 mi. S of La Barge on US 189	4 mi. E of MP 43 (N leg)	Lincoln
Names Hill (PH0069451)	5 mi. S of La Barge and W of US 189 on Green River	2 mi. E of MP 57 (N leg)	Lincoln
Western Trading Company[g]	Diamondville	9.5 mi. NW of MP 23 (N leg)	Lincoln
Saint John's Church[g]	Green River	2 mi. NE of MP 20 (W leg)	Sweetwater
Carnegie Public Library[g]	177 N Center St., Green River	2 mi. NE of MP 20 (W leg)	Sweetwater

[a] Federal Register, V. 44, N.26, February 6, 1979.

[b] Colorado Historical Society, "Colorado Inventory of Historic Sites", September 14, 1979.

[c] Pending nomination to National Register.

[d] NHL: National Historic Landmark.

[e] Utah Division of State History, "Antiquities Site Inventory", September 1979.

[f] Wyoming Recreation Commission," Wyoming Historic Preservation Plan", as amended August 24, 1979.

[g] Eligible for inclusion in the National Register.

The Paleoindian Period can be divided into three phases or complexes: the Clovis or Llano Complex (circa 10,000-9000 B.C.), the Folsom Complex (9000-7000 B.C.), and the Plano Complex (circa 7000-5000 B.C.). Artifacts from this period are represented by the fauna and associated stone tool (lithics) assemblages, particularly projectile points, of the three complexes.

Paleoindian sites may be encountered at any point along the route. Sites will most likely be buried, and may be visible during trenching activities and in disturbed areas such as plowed fields, blowouts, and arroyos. There may be no visible evidence of sites in undisturbed areas. Types of sites that can be expected are kill sites, campsites, lithic scatters, and isolated artifacts. Three recorded Paleoindian sites are known to exist within the study corridor.

Archaic Period (6000 B.C.-A.D. 450)

Archaic cultures are generally characterized by the hunting of modern animal species and by a heavy reliance on wild plant foods. Artifacts from the period include a variety of projectile points and tools such as choppers, scraper planes, butchering tools, and hammer stones. Types of habitation sites and the conditions in which they are found include the following: (1) seasonal procurement camps, most frequently located in dune areas; (2) hunting camps, associated with higher elevations (usually mesa tops and canyon heads); and (3) sheltered camps, probably seasonally occupied and usually located near a permanent water source.

Archaic sites may be located at any point along the pipeline route but particularly in areas containing several wild food sources. Older Archaic sites are likely to be buried with more recent sites visible on the surface. Types of sites that may be expected are caves, rock shelters, camps with and without shelters, petroglyphs, and lithic scatters. Forty-four recorded Archaic sites are known to exist within the study corridor.

Formative Period (A.D. 450-1450)

The Formative Period in the area crossed by the pipeline is characterized by three cultural regions in the project area. They are: the Southwest (west Texas to southwestern Colorado), the Great Basin (eastern Utah and northwestern Colorado), and the Plains/Plateau (northeastern Utah, northwestern Colorado, and southwestern Wyoming).

Southwest

Two major post-Archaic Southwestern cultures arose in the project vicinity and could be encountered along the pipeline route: the Anasazi (A.D. 450-1300) from Colorado to central New Mexico, and the Mogollon (A.D. 600-1450) from central New Mexico into western Texas.

Formative Period sites in this area are most likely to be found west of the Sandia-Manzano Mountains. The pipeline is not likely, because of previous inventories and disturbance, to encounter large sites, but may encounter or come near small sites and may cross Anasazi roads, particularly near the Chaco area. Evidence of sites should be clearly visible on the surface. Types of sites that may be encountered are as follows.

- Northern study area: multiple-room surface structure, structures of stone masonry or adobe with subterranean kivas; single-room semi-subterranean slab-lined structures; circular single-room surface structures of rock; pottery and lithic scatters.

- Southern study area: circular and rectangular, slab-lined or unlined pithouses; multiple-room surface or slightly semi-subterranean structures of stone masonry or stone and adobe; open camps; rock shelters; pottery and lithic scatters.

Great Basin

The cultural complex in eastern Utah and northwestern Colorado is termed the Fremont. The Fremont culture is quite similar to the Anasazi culture of the Southwest. The most distinctive Fremont feature is the pithouse, which was generally round with an adobe rimmed central fireplace, four roof support posts, wall lining of adobe or adobe and stone without ventilators, entrance passageways, antechambers, benches and partitions that were known from the Anasazi region. Other structures found at Fremont sites are towers, used in

both lookout and domestic functions. There is an emphasis upon storage facilities at most Fremont sites. Fremont ceramic assemblages are identifiable in that they are tempered with crushed rock and are predominantly a plain, sometimes polished, gray ware fired in a reducing atmosphere. Pictographs and petroglyphs are common in the Fremont culture area. Zoomorphic, anthropo-morphic, and geometric designs are present, and are often stylized. The Fremont peoples seem to have abandoned this area sometime around 1200 A.D.

Plains/Plateau

In the Plains/Plateau culture area, agriculture does not seem to be evident. There is a continuum of projectile point types and, except for the occurrence of pottery and some soapstone bowls, the subsistence system does not appear to change drastically from the Archaic Period. There is a shift from the use of the atlatl dart to the use of the bow and arrow. In some parts of the area tipi rings (stone circles) are associated with pottery and small points. There is evidence from some sites that group hunting may be associated with pronghorn antelope and bison remains during this period.

Athabascan-Shoshonean Period (1300 A.D. - Present)

Little archaeological documentation exists for the prehistoric occupation of the proposed project area after the Formative Period because of the nomadic traits of the peoples. The Navajos and Utes were known to have occupied the Southwest area. The Shoshonean tribes were the major tribes that utilized the Plains/Plateau area. Sites most likely to be encountered are surface sites such as slight depressions encircled with rocks (wickiup sites) and open camps. In areas where limited agriculture was practiced, adobe structures may be found. Timber lodges may have been used by the Shoshone and other Plains/Plateau tribes. Separate discussions are presented below for each of these cultural groups.

Navajo Tradition (A.D. 1550-1775)

The Navajos and their Athabascan-speaking relatives, the Apaches, arrived in the area about A.D. 1500. The bulk of data for the Navajo Tradition Period is from northwestern New Mexico in the Upper San Juan, Gobernador, Largo, Big Bead Mesa, and Chaco localities. The possibility of encountering historic Navajo sites in the La Plata drainage is enhanced near the pipeline route, where Navajos are recorded to have lived with the Utes in the late 1800s.

Ute Tradition (circa A.D. 1600-Present)

The proposed pipeline route passes through the present Southern Ute Indian Reservation just east of the boundary with the Ute Mountain Ute Indian Reservation to the west. Although the date the Utes entered the Southwest is not known, it probably postdates Anasazi abandonment of the area. The earliest historic period reference to the Southern Utes was made by the Spanish in 1626. Early Ute sites may well be encountered along the pipeline right-of-way. Little is known at present about the archaeology of early Ute campsites and other activity areas.

Shoshone (A.D. 1300 - Present)

The Shoshone were the major tribe within the Plains/Plateau area. Other tribes, such as the Gros Ventre, Comanche, Crow, Flathead, Arapahoe, Cheyenne, and Sioux, frequented the vicinity of the project for hunting, raiding, or trade. Subsistence was a mixed base, utilizing seasonally available resources and hunting of large game. After the introduction of the horse, the pattern of life changed to an equestrian, bison-hunting orientation.

Spanish Exploration and Settlement

Numerous Spanish expeditions traversed the study corridor including Coronado's in 1540. Juan de Rivera led the first expedition into San Juan country between 1761 and 1765. The Franciscan friars, Escalante and Dominguez, traveled along the San Juan, Dolores, and White rivers in Colorado, reaching Utah Lake later that year.

Fur Trade

The first Europeans to settle in the Great Basin were fur trappers who worked the Three Corners region of Wyoming, Colorado, and Utah in the early nineteenth century, especially in the long valley of the Green River. Brown's Hole was named after the French trapper Baptiste Brown. Between 1812 and 1840, the

North American and Rocky Mountain fur companies conducted extensive trapping operations, often rendezvousing with the Indians to trade.

Westward Migration

Numerous major transcontinental trails and their various connectors crisscross this part of the United States. The exact location of most of these trails in relation to the proposed route is not known, but will be determined during the on-ground inventory. Evidence of these trails is usually present as trail-ruts.

Major routes include the Old Spanish Trail and the California, Oregon, and Overland trails, converging in southwestern Wyoming and collectively referred to as the Emigrant Trail. Travel along the Emigrant Trail began in 1840 and reached its peak during the California Gold Rush of 1849. National Register sites indicative of this era within the study corridor include Names Hill, Emigrant Springs, and the Mormon Ferry, all located along the Sublette Cutoff near the northern end of the north leg, a short cut on the Oregon Trail. The Overland Stage and Pony Express, whose route roughly parallels the Emigrant Trail in southwestern Wyoming, began service in 1860. Stations within the study corridor are Granger and Black Buttes, included in the National Register, and 10 others included in the Wyoming Inventory of Historic Sites. The Union Pacific Railroad, which became part of the first transcontinental railroad system in 1869, lies within the study corridor in Wyoming.

Settlement and Development

With the completion of the transcontinental railroad in 1869, coal mining to supply the Union Pacific trains became an important activity in southwestern Wyoming. Coal mines which flourished during the early days of the railroad include Black Buttes, Hallville, and Gibralter, all included in the National Register, and Kemmerer, included in the Wyoming Inventory of Historic Sites. The Piedmont Charcoal Kilns, a National Register site within the study corridor in Wyoming, were built in 1869 to process charcoal for use in mining smelters.

The railroad between Durango and Silverton lies within the study corridor and is included in the National Register of Historic Places. The Rio Grande Southern Railroad parallels the proposed route for about 10 miles, and is on the Colorado State Register. The Alhambra Stage Stop and Ferry, a potential National Register site in Utah, is within the study corridor.

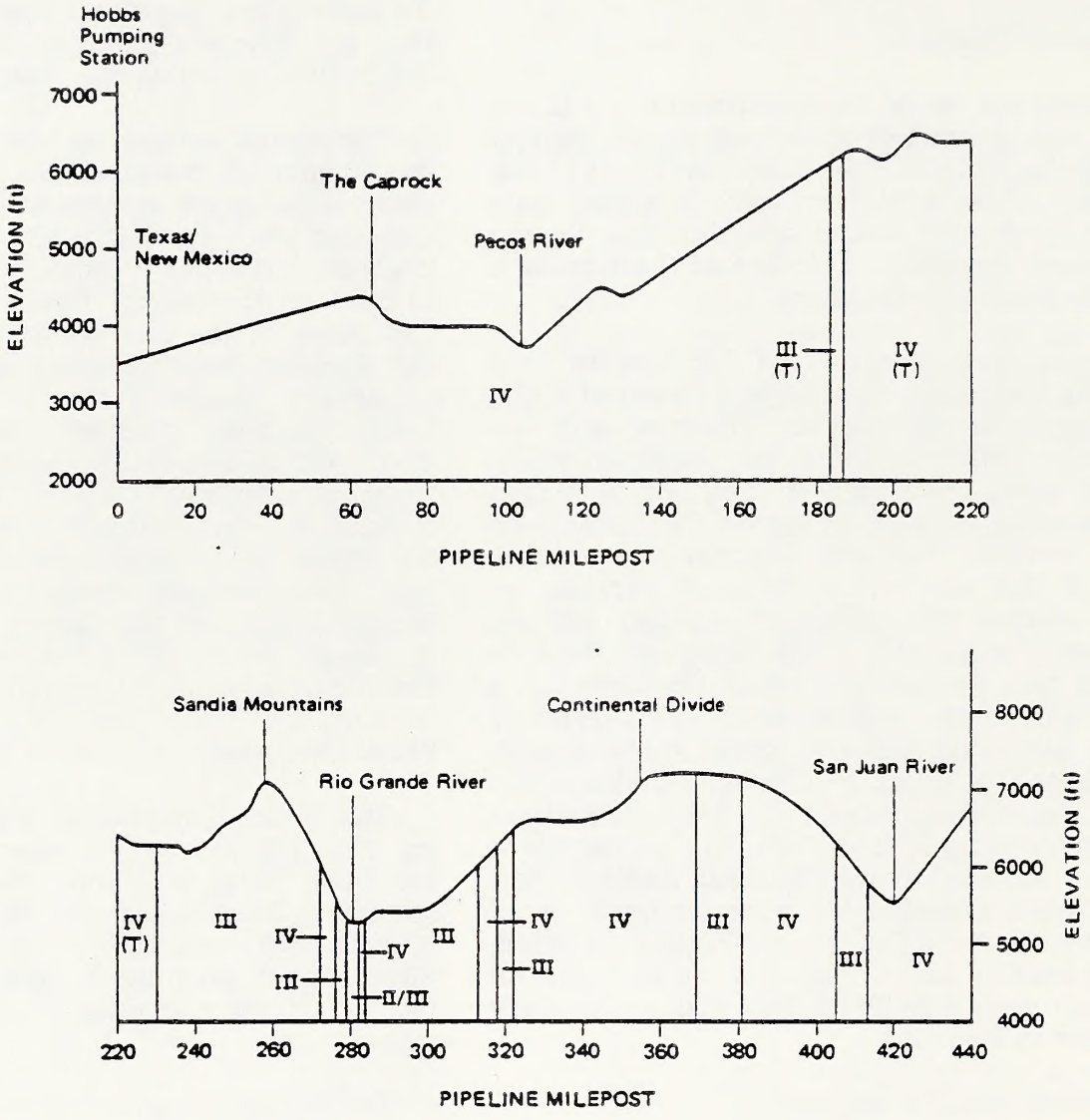
Permanent settlement and development in the vicinity of the study corridor in the late 1800s is reflected by several extant structures and districts now included in the National Register. The J.C. Penney House and Historic District in Kemmerer, Wyoming, contains the first store of the international shopping chain. Doc Parson's Cabin Complex, used as a hideout by outlaws, is one of the few remaining nineteenth century structures in Brown's Park, Utah. Other National Register sites within the study corridor indicative of this era are the Orlando W. Warner House built in Moab during the 1890s, Wolfe Ranch near Arches National Park, the Newman Block in Durango, Saint John's Church and the Carnegie Public Library in Green River, Wyoming, and the Western Trading Company in Diamondville, Wyoming.

Visual Resources

The visual resources of the areas surrounding the proposed action were evaluated using the BLM Visual Resource Management (VRM) system. The system is described in BLM Manual 8400, available at BLM offices. The VRM system provides a standardized method for identifying and classifying visual resource values.

The classification of areas is based on an evaluation of the existing landscape in terms of scenic quality, visual sensitivity, and viewing distances. There are 5 possible VRM classes--I through V--where I is highly valued, pristine landscape and V is a class temporarily assigned to extensively modified landscape and low visual resource. These VRM classes are a guide for visual resource impact analysis.

The proposed action traverses a variety of topography and vegetation. The associated visual resource classes vary accordingly. The locations of VRM classes are shown on elevation profiles in Figures 2-1 and 2-2. A more detailed description of scenic quality, visual sensitivity, and viewing distances for any



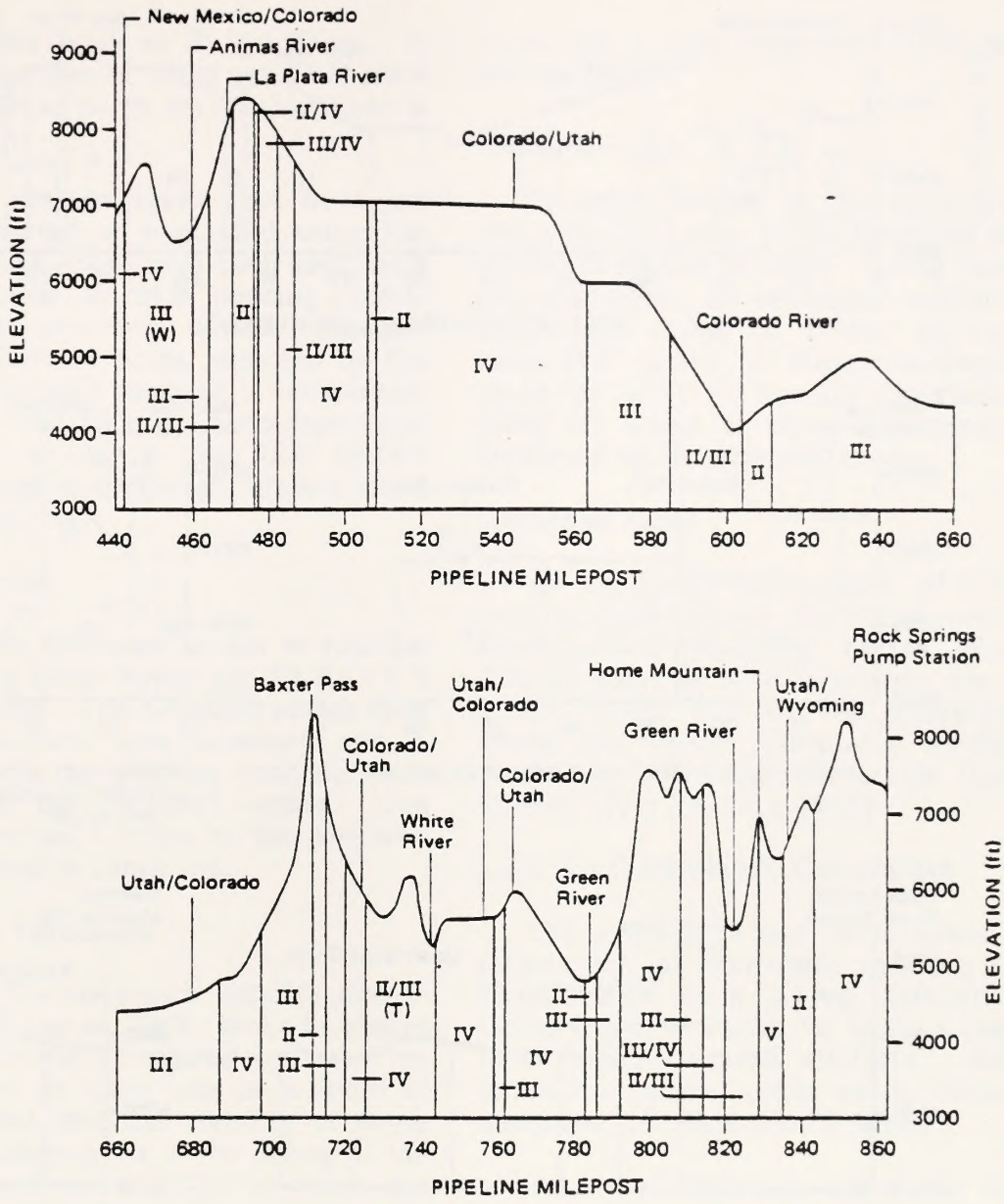
LEGEND:

I, II, III, IV, V—Visual Resource Management Classes
(T)—Tentative Class

SOURCES:

BLM—Albuquerque & Roswell District Offices
BLM—Environmental Statement CO_2 Project

Figure 2-1. VISUAL RESOURCE MANAGEMENT CLASSES ALONG THE PROPOSED MAINLINE ROUTE



LEGEND:

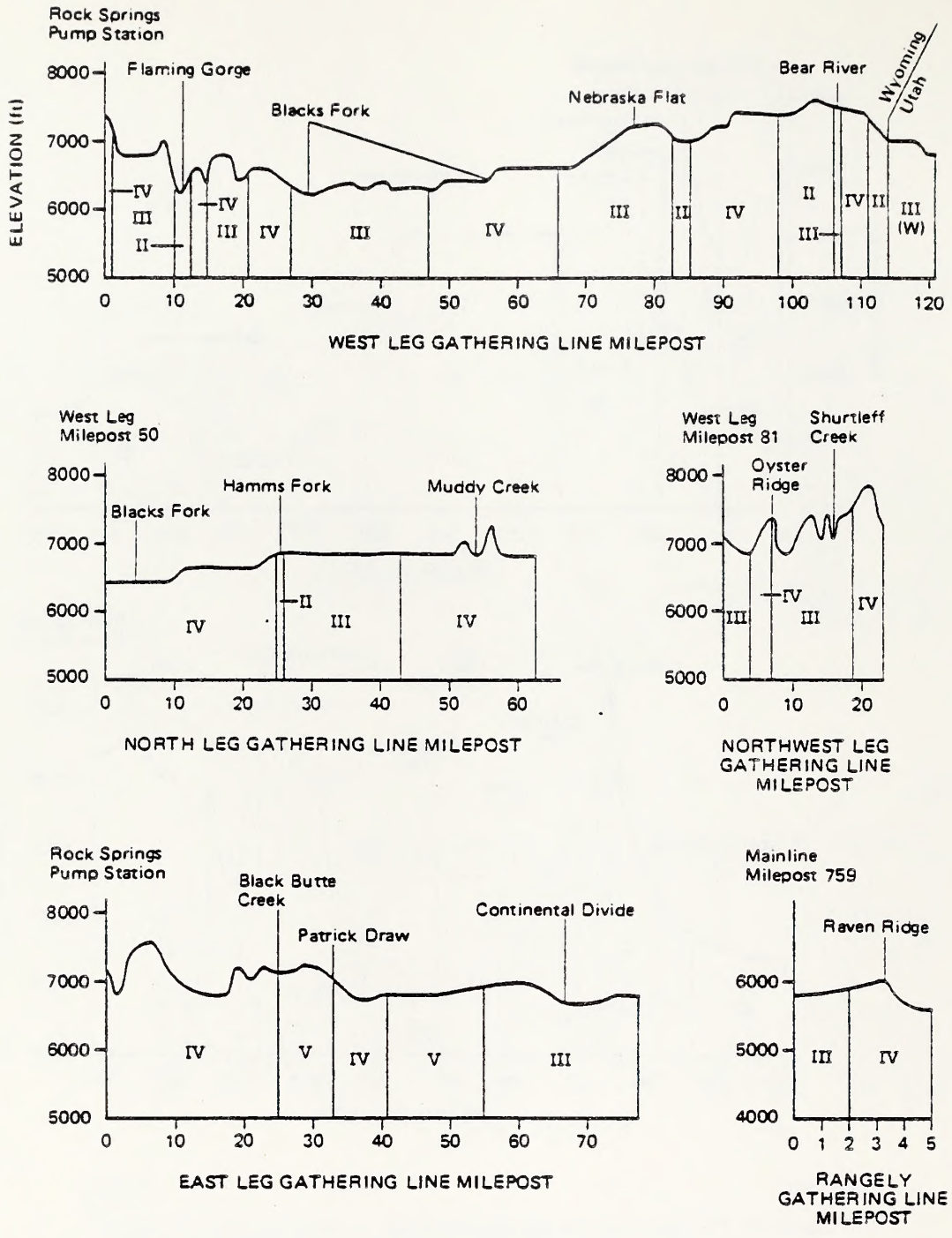
I, II, III, IV, V – Visual Resource Management Classes
(W) – Estimated by Woodward-Clyde Consultants, Based on the VRM System
(T) – Tentative Class

SOURCES:

BLM – Colorado State Office, Utah State Office, Wyoming State Office, Southwest Wyoming Coal-Final EIS
Forest Service
Woodward-Clyde Consultants
BLM 1980

BLM 1980

Figure 2-1. VISUAL RESOURCE MANAGEMENT CLASSES ALONG THE PROPOSED MAINLINE ROUTE (concluded)



LEGEND:

I, II, III, IV, V – Visual Resource Management Classes

(W) – Estimated by Woodward-Clyde Consultants, Based on the VRM System

SOURCES:

BLM – Colorado State Office, Wyoming State Office, Southwest Wyoming Coal-Final EIS, South Central Wyoming Coal-DES

Woodward-Clyde Consultants

Figure 2-2. VISUAL RESOURCE MANAGEMENT CLASSES ALONG THE PROPOSED GATHERING LINES

specific site is available at BLM offices. A summary of the number of miles per VRM class and the VRM class at pump station locations is shown in Table 2-5.

The profiles indicate areas that have not been fully inventoried or evaluated using the VRM system. These areas have been assigned a tentative VRM class by BLM pending formal evaluation unless otherwise noted. Baseline data for Forest Service lands, supplied by the Forest Service has been assigned a comparable BLM VRM class. The FS has a landscape management program similar to the VRM system with 5 primary visual management classes and 2 short-term classes.

Wilderness Resources

Location of the proposed action in relation to BLM Wilderness Study Areas and FS RARE II areas was evaluated. The proposed action does not cross a wilderness area boundary and in every case there is an existing road between the boundary and the proposed action. Ten study units are within 2 miles of the proposed action and are listed in Table 2-6.

Prime and Unique Farmlands

A Council on Environmental Quality memorandum, dated 30 August, 1976, seeks to ensure that Prime and Unique Farmlands are not irreversibly converted to other uses as a result of federal actions and that the viability of these lands not be diminished. It is the policy of the Soil Conservation Service (SCS) to make and keep current an inventory of the Prime and Unique Farmlands.

Twenty-five counties in 5 states are traversed by the proposed action. Of these, Important Farmland maps are available (as of 17 January, 1980) for only 5 counties. All appropriate state and local SCS offices were contacted to request additional information. The response varied considerably along the route due mainly to the initial stages of progress in identifying and mapping Important Farmlands. Identification of such lands by the SCS has just begun in some counties while in others the mapping is well under way. The location of all known Prime and Unique Farmlands was provided; however, the location and extent of State and Locally Important Farmlands was not always known.

Mainline

Throughout much of the region traversed by the proposed route, prime farmland occurs only where irrigation is used. Along the 863 mile proposed route, an estimated maximum of 18.3 miles (111 acres) of Prime, no Unique, 47.4 miles (287 acres) of Statewide Important, 9.1 miles (55 acres) of Locally Important, and 11.4 miles (69 acres) of Other Farmlands would be traversed by the proposed route.

Gathering Lines

An estimated 2,000 acres of Prime Farmland and no Unique Farmland occurs in the southwestern Wyoming region (BLM 1978). County maps of such farmlands are not available. Local SCS offices indicated that no Prime and Unique Farmlands would be traversed by the proposed action (Lewis 1979; Millsap 1979; Erickson 1980).

Land Use Controls and Constraints

The proposal would cross areas under the jurisdiction of numerous planning authorities. These range from states, through Statewide Comprehensive Plans for various resources, to local special-purpose districts. Additionally, numerous federal plans exist, including plans developed for BLM and FS lands.

Table 2-7 indicates the status of the BLM planning process in Districts affected by the proposed action. The Management Framework Plan (MFP) represents the final stage of planning decisions, although even these decisions are subject to change through public discussion and new information. Approved Forest Service plans exist for Ashley National Forest and Flaming Gorge National Recreation Area.

The National Park Service has proposed a segment of the Green River for inclusion into the Wild and Scenic River System. Currently, a study is being prepared for transmittal to the Office of Management and Budget for eventual release to Congress and the public. This document may recommend inclusion of the river

Table 2-5. DISTRIBUTION OF VRM CLASSES BY MILES OR LOCATION FOR PROPOSED ACTION

	VRM Class				
	I	II	III	IV	V
Mainline	0	47	303	507	6
Gathering Lines	0	17	115.5	131.5	22
Pump Stations					
White Lakes, NM				x	
Edgewood, NM			x		
Huerfano, NM				x	
Lisbon, UT			x		
Rock Springs, WY (Highway 373)				x	
San Luis, NM				x	
Duran, NM				x	
Dolores, CO				x	
Thompson, UT			x		
Dragon, UT			x		

Table 2-6. WILDERNESS AREAS FOR INTENSIVE INVENTORY WITHIN TWO MILES OF THE PROPOSED ACTION

BLM#	Name of Area	County/State	Acreage	Milepost	Distance & Direction	Existing Use
NM-010-022	Cabezon	Sandoval, NM	8,320	317	2.0W	Grazing
CO-030-251	Meneffe Mountain	Montezuma, CO	7,360	483	0.5S	Grazing, oil & gas leases
UT-060-139	Mill Creek	San Juan & Grand, UT	18,200	88-598	1.0E	Grazing, mineral exploration, recreation
UT-060-140	Behind the Rocks	Grand, UT	18,500	590-600	0.2W	" "
UT-060-138	Negro Bill Canyon	Grand, UT	8,406	600-603	1.0E	" "
UT-060-089	Gold Bar Canyon	Grand, UT	22,100	600-608	0.1W	" "
CO-070-001	Prairie Canyon	Garfield, CO	10,200	695-705	2.0W	Grazing
WY-040-406 WY-040-407 WY-040-410	Clay Basin - Browns Park	Sweetwater, WY	31,622	834-845	0.1W	Grazing, hunting

Table 2-7. STATUS OF BLM MANAGEMENT FRAMEWORK PLANS (MFP) FOR PLANNING UNITS IN AFFECTED DISTRICTS

	Planning Complete	Planning Incomplete
New Mexico		
Roswell District		
1. East Chaves	X	
2. East Eddy/Lea	X	
3. West Roswell		X
4. Llano		X
5. West Chaves		X
6. Lincoln		X
Albuquerque District		
1. San Juan	X	
2. Chaco	X	
3. Cabezon		X
4. Rio Grande	X	
5. Northeast		X
Colorado		
Montrose District		
1. Sacred Mountain	X	
2. Durango-Chromo	X	
3. San Miguel		X
Grand Junction District		
1. Baxter-Douglas	X	
Craig District		
1. White River	X	

Table 2-7. STATUS OF BLM MANAGEMENT FRAMEWORK PLANS (MFP) FOR PLANNING UNITS IN AFFECTED DISTRICTS (Concluded)

	Planning Complete	Planning Incomplete
Utah		
Moab District		
1. Book Mountain	X	
2. Big Flats/Squaw Park	X	
3. Dry Valley/Monticello	X	
Vernal District		
1. Three Corners	X	
2. Bonanza	X	
3. Ashley Creek	X	
4. Sleep Ridge	X	
Wyoming		
Rock Springs District		
1. Salt Wells/Pilot Butte	X	
2. Kemmerer	X	
3. Sublette	X	
Rawlins District		
1. Divide	X	

segment crossed as Scenic. The proposed action would cross this segment at MP 822.

The Moab District of the BLM has expressed concern about tight access through Moab Canyon. This narrow canyon is the only viable north-south corridor through eastern Utah.

Social and Economic Conditions

The potential for significant impacts from the proposed action was examined for jurisdictions and residents associated with the proposal. Jurisdictions with potential involvement were: (1) counties through which the route passes, (2) towns within five miles of the route, and (3) towns whose services during construction may be solicited. Suppliers and operators of the gas processing plants were also considered. Data were collected and analyzed for the topics of population trends, employment conditions, indicators of economic well being, temporary housing availability, physical proximity, and fiscal status. Data and analyses for which no significant impacts were found are on file at the NMSO, BLM.

Two topics with potential for significant socioeconomic impacts are short-term demand for temporary housing and benefit to suppliers and operators of gas processing plants due to increased efficiency of operations and sale and use of the natural gas liquids.

Housing Availability

Thirteen areas were identified as most likely to be affected in terms of increasing housing demand associated with construction of the proposed action. These were Hobbs, Roswell, Albuquerque, Farmington, the Cortez-Durango area, Moab, Grand Junction, Rangely, Vernal, Rock Springs, Green River, Evanston, and Kemmerer. Of these, Hobbs, Moab, Green River, Evanston, and Kemmerer have an especially short supply of temporary housing.

Hobbs, NM

Due to intense energy development, Hobbs has become the second fastest growing area in New Mexico since 1973. The housing market is very tight, with the vacancy rate around one to two percent.

Moab, UT

Moab has a very tight market in conventional housing; however, the area has 16 motels with a total of 503 units (Maple, 1980) to accommodate tourists, primarily during the period between early May to late August. During this peak season of tourist use, the vacancy rate is generally 0-5 percent. However, during 1979 operators experienced a poor season due to fuel uncertainties and high costs. Business was down by as much as one-half at times at the 2 largest motels. Managers of these 2 facilities expect a similar season for 1980 (Marks, 1980; Mauzey, 1980).

In addition to motel units, Moab has 10 trailer parks at which there are some mobile home spaces available for hookups. There is also a private campground near Moab.

Green River, WY

The housing market is extremely tight due to intense energy development and land use constraints. Much construction has been proposed, but there is limited building space and no areas zoned for mobile homes in the city or toward Rock Springs.

Evanston, WY

Energy development projects in the area have created a heavy demand for temporary housing in Evanston. Peak demand for housing units is essentially year-around. The hotel-motel vacancy rate is estimated at under 2 percent (10 units). The situation with apartments is similar and mobile home and Recreation Vehicle hookups are fully occupied.

Kemmerer, WY

Vacancy rates in the area are effectively 0 percent. Energy development and mining industry workers account for most of the year-around high demand for temporary housing.

ALTERNATIVES

Discussion of the affected environment for the alternatives is not repeated if it is consistent with that for the proposed action.

All Alternatives (AB, DF, DEG)

Paleontology

Table 2-8 lists the total number of miles of formations along the alternatives having poten tial paleontological resources.

Cultural Resources

All alternatives lie within the cultural areas described for the proposed action; however, the number of known sites differs as presented in Table 2-9.

Visual Resources

The milepost locations of VRM classes for the alternative routes are shown in elevation profiles in Figure 2-3. The number of miles and pump stations per VRM class is shown in Table 2-10.

Douglas Pass Alternative (AB)

Prime and Unique Farmlands

This alternative would traverse an estimated six acres of Prime, no Unique, 14 acres of Statewide Importance, no Locally Important, and nine acres of Other Farmland (SCS 1979a, 1979b, 1979c).

Little Mountain Alternative (DF)

Prime and Unique Farmlands

This alternative would go through an estimated 18 acres of Statewide Important Farmland but no known areas of Prime, Unique, Locally Important, or other Farmland (Erickson 1980; Millsap 1979).

Land Use Controls and Constraints

This alternative would cross the same segment of the Green River that is proposed for inclusion in the Wild and Scenic River System at MP DF 21.

Pine Mountain Alternative (DEG)

Prime and Unique Farmlands

Approximately 12 acres of Statewide Important Farmland would be traversed by this alternative; however, no known areas of Prime, Unique, Locally Important or Other Farmland would be crossed (Erickson 1980; Millsap 1979; Robinson 1979).

Land Use Controls and Constraints

This alternative crosses the Proposed Wild and Scenic River segment of the Green River at MP DEG 22.

Table 2-8. FORMATIONS AND NUMBER OF MILES ALONG THE ALTERNATIVE ROUTES HAVING POTENTIAL PALEONTOLOGICAL RESOURCES

Douglas Pass (AB) Alternative

Formation	Miles
Wasatch	39
Green River	2
total	41

Little Mountain (DF) Alternative

Formation	Miles
Wasatch	10
Green River	11
total	21

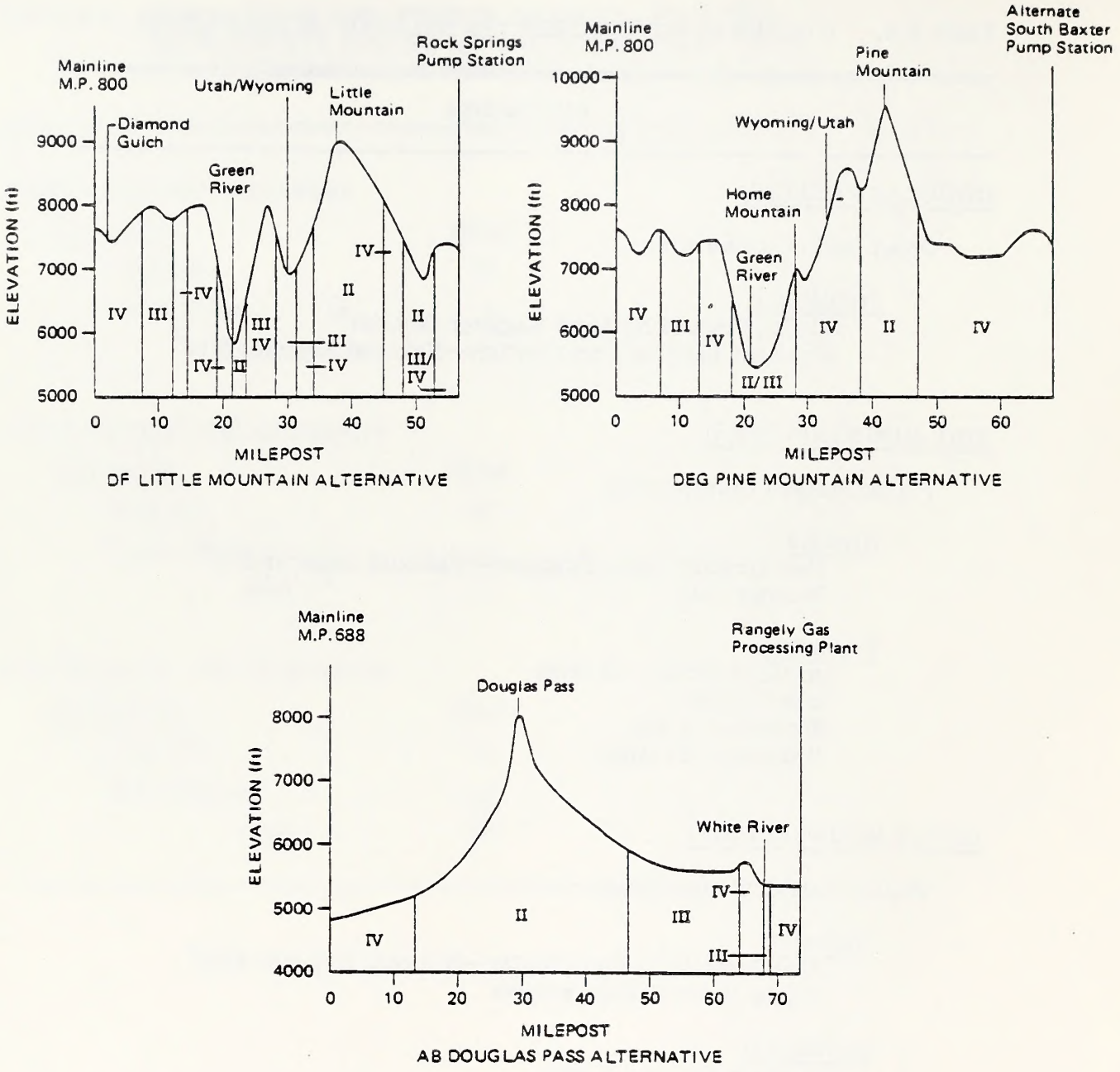
Pine Mountain (DEF) Alternative

Formation	Miles
Wasatch	17
Green River	3
total	20

Table 2-9. CULTURAL SITES WITHIN TEN MILES OF ALTERNATIVES

Alternatives
DOUGLAS PASS (AB)
Great Basin Culture Area
Prehistoric
Cañon Pintado National Register District[a]
Fremont Lookout Fortification--National Register Site[a]
PINE MOUNTAIN (DEG)
Plains/Plateau Culture Area
Historic
Doc Parson's Cabin Complex--National Register Site[a]
Brown's Hole
Prehistoric
Archaic Period - 10 sites
Ute - 1 site
Shoshone - 1 site
Unknown - 24 sites
LITTLE MOUNTAIN (DF)
Plains/Plateau Culture Area
Historic
Doc Parson's Cabin Complex--National Register Site[a]
Uncle Jack's Cabin Complex
Prehistoric
Archaic Period - 6 sites
Formative - 5 sites
Ute - 1 site
Paiute - 1 site
Unknown - 32 sites

[a]Federal Register, V. 44, N. 26, February 6, 1979.



LEGEND:

I, II, III, IV, V—Visual Resource Management Classes

SOURCES:

BLM—Colorado State Office, Utah State Office,
Wyoming State Office,
Southwest Wyoming Coal- Final EIS
Forest Service

Figure 2-3. VISUAL RESOURCE MANAGEMENT CLASSES ALONG ALTERNATIVE ROUTES

Table 2-10. DISTRIBUTION OF VRM CLASSES BY MILES OR LOCATION FOR ALTERNATIVES

Alternative	VRM Class I	II	III	IV	V
Douglas Pass					
CO	0	34	18	20	0
Little Mountain					
UT	0	2.5	10.5	17	0
WY	0	16	3	7	0
Pine Mountain					
UT	0	6	9	21	0
CO	0	0	0	2	0
WY	0	10	0	20	0

CHAPTER THREE
ENVIRONMENTAL CONSEQUENCES

The description of the proposed action and alternatives (Chapter One) outlines special construction and resource protection practices proposed by the applicant to help minimize adverse environmental impacts. Impact analyses were based on the assumption that these considerations would be implemented.

Construction, operation and maintenance of the following project components (detailed in Chapter One, Proposed Action) were considered in impact analysis:

1. electrically operated injection pumps in various gas processing plants
2. main pipeline
3. gathering lines and spurs to processing plants
4. pump stations
   - o electric service
   - o telephone line
   - o one microwave tower
5. above-ground gate valves and check valves
6. above-ground scraper traps with check valves
7. cathodic protection systems
8. right-of-way markers

Impact analyses were conducted for all resources and impact topics listed in Table 3-1. Criteria for determining significance were developed for each of the resources and are presented below.

CRITERIA BY WHICH SIGNIFICANT IMPACTS WERE DETERMINED

Climate

Impacts on climate would be considered insignificant if the proposed action would not cause a measurable change in any climatic parameters (temperature, precipitation, wind speed and direction) on a scale larger than the micro-scale.

Air Quality

Impacts to air quality would be considered insignificant if one of the following criteria could be met by the proposed action and alternatives.

1. Temporary or localized impacts from construction which would not affect regional and/or long-term air quality.
2. Estimated emission rates at the pump stations would not exceed the following:
   - Carbon Monoxide (CO) -- 100 tons per year
   - Nitrogen Dioxide (NO_2) -- 10 tons per year
   - Sulfur Dioxide (SO_2) -- 10 tons per year
   - Total Suspended Particulates (TSP) -- 10 tons per year
   - Ozone -- 10 tons per year of volatile organic compounds
3. Estimated concentration increases of pollutants which exceeded the rates expressed in number 2 above would not exceed the following:

Table 3-1. ENVIRONMENTAL RESOURCES AND IMPACT TOPICS ANALYZED

- Climate
- Air Quality
  1. fugitive dust from construction
  2. emissions from pump stations
  3. non-attainment areas
- Geologic Hazards
  1. subsidence
  2. landsliding
  3. fault rupture
  4. volcanic eruption
  5. radioactivity
- Paleontology
  1. areas of known potential for scientific fossils
  2. areas of high potential for exceptional scientific fossils
- Soils
  1. soil erodibility by type
  2. soil loss
  3. slope, erosion control
  4. reclamation measures
- Water Resources
  1. construction impacts on water quality (suspended sediment)
  2. operation impact on water quality (spills)
  3. floodplains
  4. relationship to other planned water resource developments
  5. consistency with 208 water quality management plans
- Vegetation
  1. vegetative types
  2. amount of surface disturbance
  3. production losses
  4. revegetation measures
  5. riparian vegetation
  6. compliance with Endangered Species Act, Section 7.
- Wildlife
  1. game/non-game species
  2. crucial habitats
  3. amount of habitat disturbance
  4. season of use
  5. aquatic habitat
- Wildlife (continued)
  6. wild horses
     a. habitat disturbance
     b. sensitivity to disturbance
  7. compliance with Endangered Species Act, Section 7.
- Cultural
  1. compliance with Historic Preservation Act, Section 106
- Visual
  1. VRM Classes
  2. short-term adverse impacts
  3. long-term adverse impacts
- Noise
  1. construction impacts
  2. operational impacts
- Land Uses
  1. Recreation
     a. site inventory
     b. access
     c. dispersed use areas
  2. livestock grazing
     a. production loss
  3. agriculture
     a. production change
     b. Prime and Unique Farmlands
  4. wilderness
- Land Use Controls and Constraints
  1. federal, state and local land use plans
- Transportation Networks
  1. disruption
- Social and Economic Conditions
  1. population trends
  2. employment conditions
  3. indicators of economic well-being
  4. fiscal status
  5. temporary housing
- Energy Use
  1. energy used to construct and operate the pipeline versus energy transported by the pipeline.

- Carbon Monoxide (CO) -- 500 $\mu g/m^3$, 8-hour average
- Nitrogen Dioxide (NO_2) -- 1 $\mu g/m^3$, annual average
- Sulfur Dioxide (SO_2) -- 5 $\mu g/m^3$, 24-hour average
- Total Suspended Particulates (TSP) -- 5 $\mu g/m^3$, 24-hour average

4. Predicted ambient concentration (pollutant increases exceeding the criteria in number 3 plus existing levels of pollutants) would not exceed one-fourth of applicable federal standards.

Geologic Hazards

Impacts were considered insignificant if the proposed action and alternatives were located to avoid both known active faults and areas where the estimated expected horizontal acceleration figures for the affected areas indicate a reasonably high probability of earthquake induced ruptures.

In addition, impacts were considered insignificant if route location avoided any known landslides and if special construction practices would be sufficient to reduce potential risk from rupture due to landslides in potential landslide areas.

Paleontology

Impacts to paleontological resources would be considered significant if there would be a high probability of damaging or destroying fossils of exceptional scientific value.

Soils

Impacts to soil from expected increases in erosion rates as a result of construction of the proposed action and alternatives were considered insignificant if the loss of soil would not prevent reclamation and recovery to near pre-construction conditions.

Water Resources

Ground Water Quality

Since no potential project-related impacts were identified, ground water resources were not analyzed for significance.

Surface Water Quality

Impacts would be considered insignificant if annual in-stream sediment loads were not increased by more than .1 percent in streams whose watersheds would be affected by the proposed action and alternatives.

Stream Crossings

Impacts from excavation would be considered insignificant if excavation would not cause the release of toxic or oxygen-demanding substances.

Ruptures and Spills

Given the low probability of a rupture and the nature of the pipeline products, impacts were considered insignificant if no municipal surface water intakes were within 5 miles of a river crossing.

Vegetation

Impacts to vegetation due to removal of cover and surface disturbance were considered insignificant if (1) no more than 1 percent of a total vegetation type within a geographic region (20-mile corridor) was disturbed or (2) if the disturbance was greater than 1 percent but the impact was beneficial or the probability of establishing adequate vegetation cover to minimize soil erosion would occur within one year following construction, thereby minimizing long-term loss of productivity.

Threatened or Endangered species are being considered on a case-by-case basis as part of U.S. Fish and Wildlife Service Section 7 consultation.

Wildlife

Impacts on crucial wildlife habitat resulting from vegetation and surface disturbance were considered insignificant if (1) no more than 1% of the total available crucial habitat within the geographic area (20-mile corridor) is expected to be disturbed or, (2) if the disturbance is expected to be greater than 1%, but the impact is anticipated to be beneficial or short-term (one year or less).

Threatened or Endangered species are being considered on a case-by-case basis as part of U.S. Fish and Wildlife Service Section 7 consultation.

Wild Horses

Impacts were considered insignificant if there was minimal disturbance to habitat and the sensitivity of the affected animals was low.

Cultural Resources

Impacts would be considered significant if there is a reasonable possibility that a scientifically or culturally important site could be damaged or destroyed as a result of the proposed action or alternatives.

Visual Resources

Impacts would be considered significant if the visual contrast between the existing situation and the situation created by the proposed action met the following criteria.

- contrasts of 3-5 years -- short-term significance
- contrasts of 5 or more years -- long-term significance

Noise

Noise impacts would be considered insignificant if they would not be of a long-term nature and would not cause people to be constantly exposed to levels above normal, about 50-55 decibels. Noise impacts would also be considered insignificant if receptors (homes or hospitals) would not be exposed to nighttime noise levels over typical rural background levels, about 35-40 decibels.

Land Uses

Recreation

Impacts to recreational areas would be considered insignificant if the following criteria would be met.

Construction. If construction would not disrupt recreational activities by (a) reducing access such as creating temporary obstacles on roads; (b) disturbing recreation areas by temporarily changing or altering the physical conditions; or (c) overloading of existing facilities by the construction work force.

Operation. If the operation of the pipeline would not lessen access to existing recreational areas near the proposed action over the long-term or lessen the quality of the recreational experience for users over the long term.

Livestock Grazing

Impacts to livestock grazing would be considered insignificant if this action would not result in a concentrated loss of production due to surface disturbance within any single allotment.

Agriculture

Prime and Unique Farmlands. A significant impact would occur if these lands were irreversibly converted to other uses or the viability of the lands significantly diminished as a result of the proposed action and alternatives.

Wilderness

Impacts were considered insignificant if the proposed action did not cross a boundary of a Wilderness Study Area (or FS RARE II) or come closer to a boundary than an existing road or trail.

Land Use Controls or Constraints

Impacts were considered insignificant if the proposed action did not conflict with constraints placed on land uses through legislative, regulatory, or planning processes by local, state, and federal governments.

Transportation Networks

Impacts were considered insignificant if there would not be any permanent impact on road or rail networks, or if the local traffic would not increase more than 30 percent, or if annual traffic accident rates would not increase more than 3 percent.

Social and Economic Conditions

Impacts were considered insignificant if they would not exceed the following criteria.

- population -- a permanent change in the local population larger than 5 percent by either employees or secondary impact, or a temporary change in the local population larger than 15 percent in the area where the construction workforce would reside.

- housing -- a demand for permanent housing greater than 10 percent of the local permanent housing market or a demand for temporary housing which would exhaust the local market.

- other infrastructure -- the creation of a permanent demand in infrastructure greater than 10 percent, or the temporary creation of a demand which would exhaust the excess capacity of infrastructures in the areas where the crews would live, or a change in local tax revenues greater than 10 percent.

- economics -- an employment demand on the local workforce greater than 15 percent or a permanent shift in any local industry greater than 5 percent, or a temporary impact on local business receipts greater than 20 percent.

In addition, the impacts were considered significant if the workforce would be a considerably different social group than the residents of the area in which the crew would reside, or if the workforce would present a conflict in social mores and attitudes.

The determination of significance of impacts was based on detailed analyses aided by information gained through the scoping process. Impact analyses in this chapter reflect those resources for which significant impacts are anticipated or are unknown at this time. They are:

- Paleontology
- Wildlife
- Threatened or Endangered Species
- Cultural Resources
- Visual Resources
- Social and Economic Conditions

In addition to the resources for which significant impacts were found from analysis, several topics are included in this EIS in compliance with BLM regulations or procedures. They are:

- 100-Year Floodplains
- Prime and Unique Farmlands
- Land Use Controls and Constraints
- Energy Use
- Wilderness Resources (including FS RARE II areas)

PROPOSED ACTION

IMPACT ASSESSMENT

Paleontology

Construction

The proposed action would cross approximately 250 miles of formations considered to have a potential for significant paleontological resources. The formations known to contain significant fossils and their location along the proposed action are shown by mileposts in Table 3-2. The judgment of significance is based primarily on a priority rating of formations containing known significant fossils completed by J.H. Madsen, Jr. (1980). Additional information was obtained from paleontological inventories of the Moab and Vernal Districts, Utah (Robinson, 1980) and in discussion with scientists familiar with the paleontological resources for the region.

The geologic maps used to compile the potential paleontological resources generally do not show the surficial deposits. Due to the limited width and depth of excavation along the ROW, the potential for disturbance of paleontological resources in bedrock is expected to be considerably less than the mileage indicated on Table 3-2.

Operation

Impacts would not occur to paleontological resources from the normal project operation. If emergency repairs were necessary and required clearing or trenching, adverse impacts may occur as previously discussed for construction.

100-Year Floodplains

With the exception of above-ground valves (Figure 1-2), no surface facilities of the proposed action would be located in a 100-year floodplain. Location of the subsurface pipeline in these floodplains would be unavoidable as a consequence of its length (1172 miles). However, neither the valves nor the pipeline would interfere with water courses or flood flows.

Table 3-2. LOCATIONS OF FORMATIONS ALONG THE PROPOSED ROUTE THAT CONTAIN POTENTIALLY SIGNIFICANT FOSSILS

Milepost	Formation or Group
Mainline	
65	Dockum; Chinle[a]
98 - 100	Dockum; Chinle[a]
306 - 312	Morrison[a]
338 - 346	Kirtland Shale; Fruitland[a]
346 - 366	Nacimiento, Ojo Alamo[a]
366 - 372	San Jose[a]
372 - 433	Nacimiento[a]
433 - 443	San Jose[a]
443 - 450	San Jose[b]
450 - 452	Nacimiento; Animus; San Jose[b]
456 - 495	San Jose, Nacimiento; Animus[b]
556 - 558	Morrison[c]
586 - 596	Morrison[c]
605 - 610	Cutler[c]
610 - 617	Morrison[c]
711 - 712	Wasatch[d]
712 - 714	Green River[d]
714 - 716	Wasatch[d]
725 - 726	Wasatch[d]
726 - 745	Green River[d]
745 - 756	Uinta[d,e]
756 - 759	Green River[e,f]
765 - 766	Wasatch[e,f]
769 - 771	Wasatch[e]
776 - 777	Morrison[e]
788 - 789	Morrison[e]
789 - 790	Cutler[e]
790 - 791	Morrison[e]
834 - 851	Wasatch[g]
862 - 863	Wasatch[g]

[a]Dane, C.H. and Bachman, G.O., 1965.

[b]Haynes, D.D., J.D. Vogel, and D.G. Wyatt. 1972.

[c]Williams, P.L. 1964.

[d]Cashion, W.B. 1973.

[e]Stokes, W.M. Madson, J.H., Jr. 1961.

[f]Mott, M.R. 1962.

[g]Bradley, W.H. 1961.

Table 3-2. LOCATIONS OF FORMATIONS ALONG THE PROPOSED ROUTE THAT CONTAIN POTENTIALLY SIGNIFICANT FOSSILS (Concluded)

Milepost	Formation or Group
Gathering Lines	
West Leg	
0 - 8	Wasatch[g]
8 - 12	Green River[g]
12 - 16	Wasatch[g]
16 - 22	Green River[g]
22 - 66	Bridger[g]
66 - 72	Green River[g]
72 - 73	Bridger[g]
73 - 76	Green River[g]
76 - 77	Bridger[g]
79	Green River[g]
81 - 82	Green River[g]
82 - 97	Wasatch[g]
Northwest Leg	
0 - 2	Wasatch[g]
2 - 3	Green River[g]
3 - 5	Wasatch[g]
North Leg	
0 - 15	Bridger[g]
15 - 19	Green River[g]
19 - 20	Wasatch[g]
20 - 21	Green River[g]
21 - 22	Wasatch[g]
22 - 46	Green River[g]
48 - 53	Green River[g]
53 - 55	Wasatch[g]
55 - 57	Green River[g]
57 - 63	Wasatch[g]
East Leg	
0 - 3	Wasatch[g]
22 - 59	Wasatch[g]
59 - 65	Green River[g]
65 - 68	Wasatch[g]
68 - 71	Green River[g]
71 - 78	Wasatch[g]

Major floodplains crossed by the pipeline would be at the following river crossings: Pecos, Rio Grande, Rio Puerco, San Juan, Animas, La Plata, Colorado, White, and three crossings of the Green River. Specific locations are identified in Table 1-6. Although no impacts on flows would occur because the pipeline would be buried, there could be some short-term impacts resulting from construction upon water quality and riparian habitat. Construction in the river bed would result in downstream turbidity and sedimentation.

Loss of riparian habitat could result along the 50-foot-wide ROW and the 250 x 450 foot construction staging areas. Runoff from these disturbed sites would contribute to some turbidity. Since fuels and lubrication oils would be used at the construction staging areas, runoff entering the streams could contain these products.

Wildlife

Seasonal restrictions (Tables 1-8 and 1-11) on construction in crucial wildlife use areas would substiantially minimize impacts to wildlife. However, the potential for two significant impacts remain. The removal of vegetation along stream banks where high quality fisheries occur may result in more than short-term impacts if revegetation does not become reestablished within one year as anticipated.

The second potential impact may occur in the Rye-Grass Draw area (MP 812-820) where a new ROW could provide new human access to a crucial winter habitat, which could result in adverse disturbance.

Threatened or Endangered Wildlife and Plant Species

The biological assesssment required as a part of the ESA, Section 7 consultation process for major federal actions is presently being conducted for each of the species which appeared on the FWS listing.

Based on this biological assessment, the BLM would determine whether any of the species listed are likely to be affected by the proposed action. Should it be determined that a species may be affected, the BLM will request formal consultation with FWS. Compliance would be determined prior to construction.

Cultural Resources

A BLM Class III cultural resource inventory would be undertaken prior to construction to locate previously unknown cultural resources in the area. A Memorandum of Agreement (MOA) between the Bureau of Land Management, the Advisory Council on Historic Preservation, and the appropriate State Historic Preservation Officers is being developed. This MOA will outline procedures and methods to identify, evaluate, and protect cultural resources in, or eligible for inclusion in, the National Register of Historic Places and mitigate any adverse effects. All known resources and those located during the inventory would be avoided, if avoidance is prudent and feasible (as determined in consultation with the appropriate surface management agency). Resources which are not prudently or feasibly avoidable would be protected prior to construction by the MOA and/or the cultural resource considerations proposed by the applicant. Therefore, any surface resources that may be affected would not be adversely impacted by the proposed action.

Construction

Known resources and resources located during the cultural resource inventory would be avoided, recorded, or have data recovered. Construction activities may alter, damage, or destroy previously unknown subsurface sites and result in disturbance to or loss of horizontal and vertical subsurface cultural information. Mixing and loss of artifacts and stratigraphic data could also occur. Alteration, damage, or destruction of these subsurface resources could result specifically in the following:

- loss of scientific and cultural information;
- loss of the physical expression of the resource;
- loss of the resource for future research;
- loss of the resources that may be valuable in terms of uniqueness;
- loss of resources that may have important cultural affiliations;
- loss of artifact material.

Indirect beneficial impacts to cultural resources which could result from project construction are as follows:

- cultural resources previously unknown could be located by the cultural resource inventory and by monitoring construction to identify any subsurface sites uncovered during construction activities (especially trenching);

- information previously unavailable could be recovered if significant sites are found during the cultural resource inventory or during construction monitoring.

Operation

Direct impacts would not result to cultural resources from normal project operation. If emergency repairs were necessary which required clearing or trenching, adverse impacts could occur, as previously discussed for construction activities. An increase in ease of conventional vehicle access may occur and, in conjunction with the decrease in project-related activity once construction is completed, may result in a greater potential for vandalism.

Visual Resources

The analysis of consequences was based on the BLM Visual Resource Management System for evaluating landscape contrasts (see BLM Manual 8423). A contrast rating was determined by evaluating the extent to which the proposed action would visually contrast with the existing landscape in terms of form, line, color, and texture. The extent of contrast is then translated into either adverse or beneficial impacts.

BLM maps delineating scenic quality, visual sensitivity and viewing distance, and other topographic maps were analyzed to determine potential problem areas and typical viewpoints of the proposed action and alternatives. Typical viewpoints are from major roadways, rest stops, recreation areas and communities. Problem areas and typical viewpoint areas were evaluated for contrasts. The duration of view, number of viewers, angle of observation, ease of revegetation, construction and restoration methods (covered in Chapter One) were all considered in the analysis of the degree of contrast. Some narrow mountain valleys and canyons have several existing rights-of-way and are sensitive to additional development. Cumulative development was considered in the analysis of degree of contrast in these areas. The contrast evaluation was concerned with only the residual effects of construction activities such as surface scars and finished structures. Construction crews and equipment would be visible temporarily, but would not have significant impact on the visual resources of the areas involved.

The proposed action would remove vegetation, disturb the topography and introduce new structures to the landscape. Restoration methods proposed in Chapter One (Proposed Action, Construction Methods) would accelerate revegetation and reduce visual contrasts resulting from vegetation removal in 1-3 years in some areas. The vegetation may not be restored to its original condition (see BLM NMSO background files for Vegetation) during this time period, but would have recovered sufficiently to reduce many contrasts. The contrasts created during this short time period (one growing season on cropland) are considered temporary and not significant visual resource impacts. Other areas would not recover easily or quickly and the contrast would remain for a longer period of time, resulting in a significant adverse impact on the visual resources. Contrasts to landforms frequently occur in rocky and/or steep sloping terrain and are difficult to mitigate. This condition results in significant adverse impact to visual resources. (Significant short term, visual impacts are assumed to result from contrasts that would be visible from 3-5 years, whereas contrasts that remain visible from 5 years to the life of the project are considered long term impacts.) The short/long term time frame when associated with vegetation contrasts, differs from the revegetation time frame discussed in Vegetation Background Files (BLM NMSO) because of the type of contrast. Color contrasts, for example, would be reduced before the vegetation returns to preconstruction conditions. The proposed action would not create beneficial impacts to visual resources. The visual resources of the following areas (identified by milepost and summarized in Table 3-3) would suffer significant adverse impacts from the proposed action.

Table 3-3. SUMMARY OF SIGNIFICANT VISUAL RESOURCE IMPACTS FOR PROPOSED ACTION

Milepost (State)	General Description	Short-Term Impact (3 to 5 years)	Long-Term Impact (5 years or longer)
Proposed Mainline			
MP 480-482 (CO)	Hills/mountainous	X	
MP 587-589 (UT)	Canyon/rock outcrop		X
MP 605-609 (UT)	Canyon		X
MP 708 (CO)	Mountainous	X	
MP 710-712 (CO)	Mountainous		X
MP 821-823 (UT)	River valley	X	
MP 826-827 (UT)	Canyon	X	
Proposed Gathering Lines			
MP 10-11, West Leg (WY)	River/canyon	X	X

Mainline

Construction of the proposed mainline would create significant visual impact in 7 areas. Six of the areas have similar physical features and impacts and are described as mountain/canyon areas. The remaining area is a river valley.

The six areas are found at Milepost (MP) 480-482 in the San Juan National Forest, Colorado; 587-589 near Kane Springs, Utah; MP 605-609 in Moab Canyon, Utah; MP 708 and MP 710-712 near Baxter Pass, Colorado; and MP 826-827 in Jesse Ewing Canyon, Utah. All of these except Jesse Ewing Canyon are areas where a pipeline already exists. Contrasts in the above areas occur on steep or rugged slopes that are highly visible to passing motorists or recreationists. The mountain slopes and canyon walls form an enclosed viewing area where contrasts can be easily detected. The removal of tall, mature vegetation from slopes in the areas of the San Juan National Forest, Baxter Pass, and Jesse Ewing Canyon would change the existing vegetation form and create contrasting, unnaturally rigid lines. Post-construction and erosion prevention techniques may induce changes in the land surface that would moderately contrast with the existing land form. Revegetation of the right-of-way would diminish visual impacts at MP 480-482 (San Juan National Forest), MP 708 (Baxter Pass), and MP 826-827 (Jesse Ewing Canyon) in 3-5 years. The right-of-way on the rocky slopes of Baxter Pass between MP 710-712 (Baxter Pass) would be difficult to revegetate or rehabilitate and the visual impact would be long term.

The Moab Canyon and Kane Springs areas are near heavily traveled routes or recreation stops where viewers would see the contrasts for longer periods of time. Moab Canyon and Kane Springs are semi-enclosed areas with rugged terrain, massive rock outcrops and sparse vegetation. The removal of large rocks and boulders from the ROW would create a strong to moderate contrast in the form and line of these formations (Figure 3-1). Revegetation would not significantly reduce this contrast so the impact would be long term.

There would be significant impact at MP 821-823, where the proposed pipeline crosses the Green River near Brown's Park. The entire area is used for recreation activities including river rafting. The river valley walls where the pipeline would cross are plainly visible to rafters and travellers in the area. Riparian vegetation which is scarce in the region grows tall and dense near the river. The removal of this vegetation would create contrasts in vegetation form and line that would take 3-5 years to rehabilitate.

Gathering Lines

The proposed gathering lines would be located primarily in Wyoming where the topography is less rugged than Colorado or Utah and the vegetation is sparse and low in height. There are occasional canyons and ridgeline features in the terrain. Throughout the gathering line system there would be only one significant visual impact on the West Leg gathering line at approximately MP 10-11. At this location, the proposed West Leg would cross the Green River in the Davis Bottom area of Flaming Gorge National Recreation Area. Canyon walls with multi-colored, horizontal bands, cottonwoods and other riparian vegetation can be found at this location. The river and surounding area are used for rafting, camping, and picnicking.

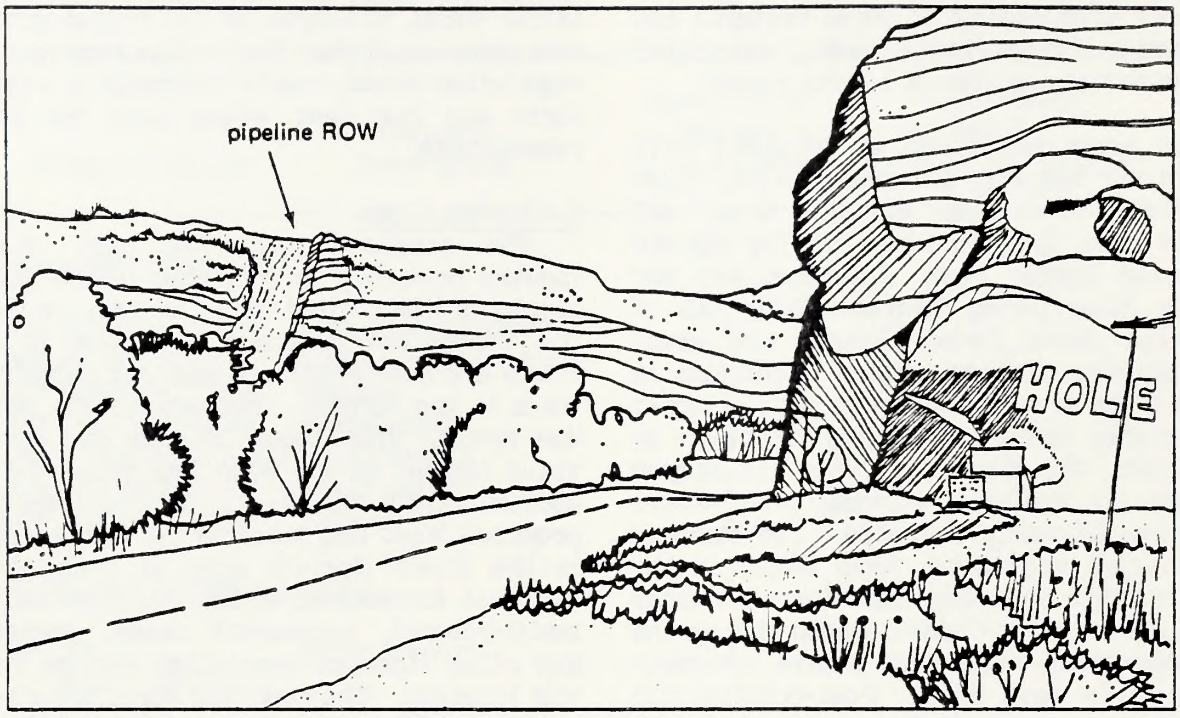
Removal of vegetation and the surface disturbance of canyon walls would create moderate to strong contrasts to the random vegetation pattern and the distinctive horizontal layers of the walls. The resulting vegetation contrasts would represent a short term impact because the revegetation capability of riparian vegetation is high. Contrasts to the canyon walls would be long term, however.

Pump Stations

None of the proposed pump stations would create a significant impact to visual resources. The pump stations are located away from major traffic routes, recreation areas and communities. The structures would be relatively small (see Figure 1-1, Chapter One) and similar to other structures found in the respective areas. The station with the microwave tower (Dragon) would be located in a canyon which is 12 miles from the nearest highway.

Wilderness Resources

No impacts to wilderness resources would result from the proposed action.



▲ Kane Springs (UT) area at MP 587-589 (illustrates cumulative impact)

▼ Douglas Pass (CO) Alternative between MP 40-43 (similar impact at MP 708 on Baxter Pass (CO)

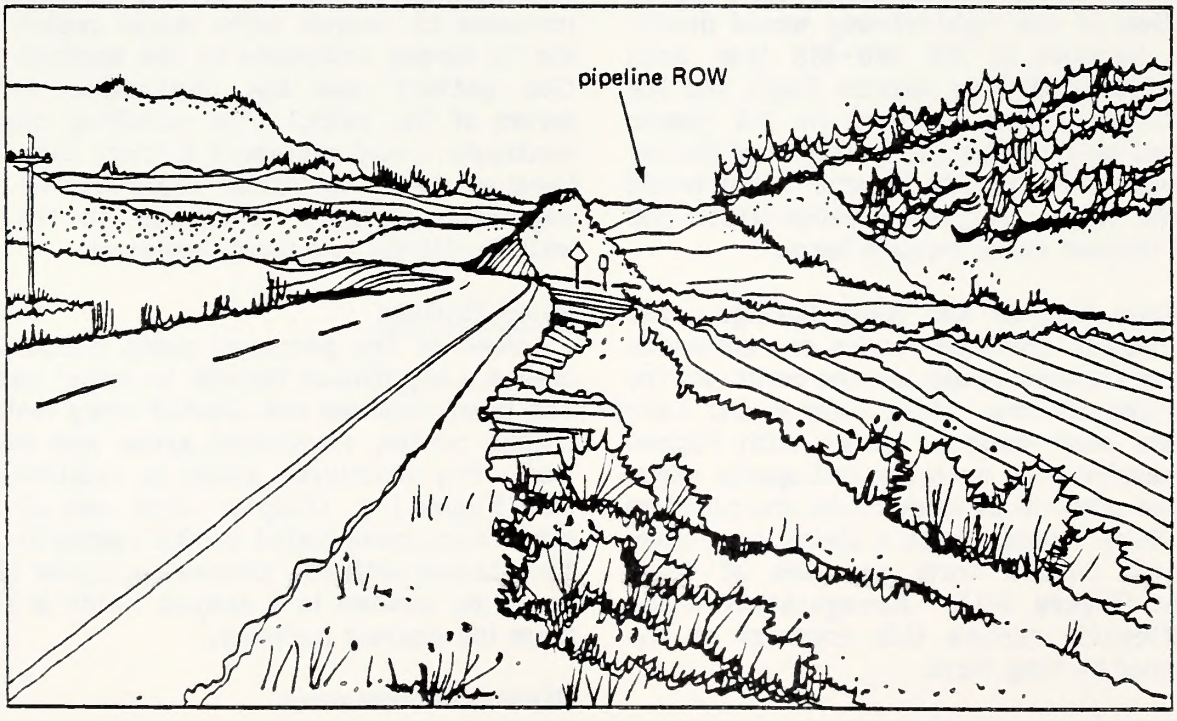


Figure 3-1. EXAMPLES OF SIMULATED VISUAL IMPACTS

Prime and Unique Farmlands

The construction of the proposed mainline would temporarily disturb an estimated maximum of 111 acres of Prime, no Unique, approximately 287 acres of Statewide Important, about 55 acres of Locally Important, and 69 acres of Other Farmlands. Even though small amounts of these lands would be traversed by the proposed action, such lands would not be irreversibly converted to other uses, and the viability of these lands would not be diminished.

Land Use Controls and Constraints

The proposed action would not conflict with any planning efforts identified within the project area. Planning documents and efforts were also assessed to determine if they would adversely affect the viability of the proposed action.

Possible inclusion of the Green River into the Wild and Scenic Rivers System could require special construction methods to minimize the effects of the proposal on the quality of the river and associated lands, as specified in Section 13(g) of the Wild and Scenic Rivers Act, as amended. Specific methods would be developed by stipulations between the Surface Management Agency and the applicant.

The Moab District and the applicant would work closely to assure the least possible disruption to the Moab Canyon area and to ensure that future use of this corridor would not be unduly constrained by the proposal.

Social and Economic Conditions

As indicated in Chapter One, Construction Workforce and Schedule, construction would be accomplished by 5 crews of 150 persons working simultaneously in 5 different geographic locations. The crews would require about 60 percent skilled workers and 40 percent unskilled workers.

Construction headquarters have not been determined, but it is likely they would be located in Albuquerque, Farmington, Grand Junction, and Rock Springs (2). Construction crews move through areas rather rapidly, so in the worst case, a crew would not be likely to remain in any one community longer than 3 months. The major increased demand would be for temporary housing and incidental services such as food and fuel.

For purposes of analysis, it was assumed that 40 percent of the workforce would be hired locally and would commute to the sites on a daily basis. Workers from outside the construction areas (90 people) generally do not bring families with them as the work schedule requires 10 hour days at least 6 days a week.

Many workers use their own motor homes and seek recreational vehicle hookups. Often, workers house together. Consequently, it was assumed that the project would cause a temporary increase of 100-120 people requiring 30-40 housing units per construction team. While this number is insignificant in larger cities such as Albuquerque, it represents a sizable increased demand in areas with tight housing markets in Hobbs, New Mexico; Moab, Utah; and Green River, Evanston and Kemmerer, Wyoming. A review of the availability of temporary housing in these communi ties indicates that housing would be in short supply depending on the season of construction. The following is a summary of impacts for five areas.

Hobbs. Construction workers may have difficulty obtaining housing in Hobbs because of the tight housing market. There are approximately 2700 multi-family and mobile home units, but only 30-50 units are currently vacant. Local officials note, however, that existing trailer parks could accommodate the workers, but this situation could change rapidly due to other energy developments in the area. However, the nearby city of Roswell has approximately 250 vacant rental units, so there should be sufficient housing in this area of construction activity.

Moab. During peak tourist season (May through August), housing may be a problem in the Moab area. The vacancy rate at motels is very low in typical years during the tourist season. There are, however, some hook-ups at trailer parks, and there may be some openings at recreation vehicle camps.

Green River. Construction employees would have major difficulties finding housing in Green

River's tight market due to the anticipated influx of 2000 trona miners. This situation will exist for 2 to 3 years beginning in 1980. Workers could, however, seek housing in nearby Rock Springs. Although the vacancy rate is less than 2 percent in Rock Springs, the project would probably not cause a major impact on this housing market. Local planners indicate that many workers would probably not bring families, especially given the tightness of the market. For those few who may, there are some rental units and trailer parks, although the latter are being phased out. Single workers can find housing in the older downtown hotels.

Evanston. Given the present and projected high demand, construction workers would have a very difficult time locating housing of any kind in Evanston. Even the one campground in town has 100 spaces that are currently in use.

Kemmerer. Although the current demand for housing is very strong, local planners indicate that some space may be available to workers if arrangements for temporary housing are made well in advance of its use. Recreation vehicle hookup space would be available only if tourist use is low.

Significant, adverse short-term impacts are foreseen in housing if construction workers enter markets in Hobbs, Moab, Green River, Evanston and Kemmerer.

Operation

The operation and maintenance workforce amounts to a total of 15 people who would be located in communities dispersed along the pipeline. Significant beneficial impacts would result directly from operation of the proposed action. Increased operating efficiency would occur for the producers of gas because they would no longer have to recycle the natural gas liquids which sometimes results in reservoir escape. Furthermore, the producers would directly benefit from the sale and use of the liquids. This pipeline is, however, one additional element of the infrastructure of the oil and gas industry relative to development of the Rocky Mountain Overthrust Area. Consequently, the proposed action may contribute to the total cumulative and significant impacts of that industry to the region. The extent of the contribution of this proposed action to that development is unknown.

Energy Use

An analysis of the energy required for construction and operation of the proposed action was conducted in accordance with CEQ Regulations, 1502.16(e) (Energy Requirements and Conservation Potential of Various Alternatives and Mitigation Measures). A comparison of construction and operation fuel re-quirements was made with findings from an analysis of the heating value of the delivered NGL to provide a general estimate of energy balance for the project, i.e., the balance between energy used and energy delivered. Assumptions on which the analyses were made and other details and calculations are on file at the BLM, NMSO.

Construction

For construction, energy would be mainly consumed by vehicles to transport workers, materials, and power equipment in the form of petroleum products (diesel fuel and gasoline).

Pipeline. Total fuel used for construction of the mainline and gathering lines would be about 871,000 gallons of diesel fuel and 97,000 gallons of gasoline. The estimated amount of fuel needed to construct each mile of the 1172 miles of pipeline is 826 gallons per mile. These estimates are based on several assumptions, including: an inventory of construction equipment that is generous, and use of equipment 25 percent of the time for 6 days a week, 11 hours a day at full load capacity horsepower (MAPCO 1979). Fuel consumed for manufacture of pipe and other construction materials was not estimated for use in the analysis. However, fuel allocation for hauling the pipe from railhead to the construction sites is included. In each state, the following estimated number of gallons of diesel fuel would be needed: 80,000 for New Mexico; 72,000 for Colorado; 32,000 in Utah, and 48,000 in Wyoming.

Pump Stations. Fuel consumption for the construction of the 10 pump stations was estimated to be 14,810 gallons of gasoline for fueling trucks used to transport workers and light equipment.

Operation

Energy requirements for operation and maintenance of the proposed action were estimated based on three calculations: (1) fuel from the pipeline used to power pump stations; (2) small trucks for maintenance; and (3) light aircraft fuel for routine inspections.

Fuel for pump station turbines would be used from the mixed stream of NGL carried by the pipeline. Fuel use estimates for pump station turbines were based on a mix of the NGL which represented a conservative assumption in that a higher proportion of the shorter chain hydrocarbons (ethane, propane, and butane) was assumed. For the initial capacity of 35,000 BPD, 5 pump stations (8000 horsepower) would require 418.3 barrels (17,570 gallons) of NGL daily. For 65,000 BPD capacity, 10 pump stations (20,000 horsepower) would need about 1046 barrels (43,920 gallons) of NGL daily.

For routine maintenance, the use of 5 small trucks would require approximately 7500 gallons of gasoline annually, and aerial inspections would require about 6548 gallons of aviation gas per year.

Energy Balance

The energy balance estimate was calculated by converting the various fuels (diesel, gasoline, and NGL mixed stream) into the common denominator of BTUs. Generally, a BTU is a measure of heat. This heat measure was used to compare the amount of heat which could be generated by the fuels used for construction and operation with the amount of heat which could be generated by the NGL carried by the pipeline over the 30-year life of the project. For the purpose of this energy balance comparison, the analysis assumes that all the NGL would be used for heat. As indicated in Chapter One, however, some of the NGL carried by the pipeline would actually be used in the manufacture of chemicals and other products.

The estimated heat balance for the proposed action is summarized in Table 3-4. For the 35,000 BPD capacity, the analysis indicates that roughly 1.53 percent of the heating value of the NGL transported by the pipeline would be required to construct and operate the proposed action. The equivalent percent for the 65,000 BPD capacity is 1.79. The comparison indicates that the pipeline transportation operation is energy efficient.

UNAVOIDABLE ADVERSE IMPACTS

Paleontology

Subsurface vertebrate fossils may be destroyed or damaged during construction maintenance or repair activities.

Cultural Resources

Subsurface sites may be destroyed or damaged during construction, maintenance, or repair activities. An increased ease of access for conventional vehicles may occur, resulting in an increase in the potential for vandalism.

Visual Resources

Completion of the project would cause unavoidable visual resource impacts in 7 separate areas along the main route. Many of the identified areas are highly valued for scenic quality and are visible from roadways or recreation areas. The outlined restoration program (Chapter One, Proposed Action, Construction Methods) would reduce visual impacts in 4 areas in 3-5 years (MP 480-482 [San Juan National Forest], 708 [Baxter Pass], 821-823 [Green River near Brown's Park], and 827-828 [Jesse Ewing Canyon]). One of the remaining areas (MP 710-712 [Baxter Pass]) would recover during the life of the project, but 2 other areas (MP 587-589 [Kane Springs] and 605-609 [Moab Canyon]) would have permanent visual impact. At these 2 locations a cumulative visual impact would result as there is already visual evidence of an existing pipeline in both areas. Proposed efforts to reduce these impacts would not be effective enough to reduce significant visual impacts over the long term in these areas.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The following discussions address the tradeoff between local short-term use of the

Table 3-4. OVERALL HEAT BALANCE

	35,000 BPD Capacity	65,000 BPD Capacity
Construction		
(diesel)[a]	1.11×10^{11} BTU	1.11×10^{11} BTU
(gasoline)[b]	1.34×10^{10} BTU	1.34×10^{11} BTU
Pump Station Operation	6.32×10^{11} BTU	1.58×10^{12} BTU
Other Operation	5.00×10^{10} BTU	5.00×10^{10} BTU
TOTAL	8.06×10^{10} BTU	1.75×10^{12} BTU
Heating Value of NGL Delivered[c]	5.278×10^{13} BTU	9.8×10^{13} BTU
Construction and Operating BTU/Delivered BTU	1.53%	1.79%

[a] 127,440 BTU/gal.

[b] 120,270 BTU/gal.

[c] 98,360 BTU/gal.

environment by and long-term productivity to the nation for the proposed action, if approved.

Cultural Resources

Long-term benefits would result from information gathered during the cultural resource inventory and any subsequent excavation or preservation of located sites.

Social and Economic Conditions

The short-term economic impacts to the area would largely result from the expenditures of the construction crews along the route. As each crew would be about 150 members and their length of stay in each community should be less than three months, the total impact on local retail sales and revenues would not be significant. For example, a store owner who experienced a 50 percent increase in sales for three months would not be likely to expand his store based on his knowledge that it would not be permanent. Instead, this impact would be viewed in the same light as the local tourist impact.

The long-term impacts and productivity of this project to the economy would be felt within the petroleum producing industry in the Overthrust Area and the petroleum products industry across the United States. However, when compared to total volume and total revenues to these industries, the impacts would be minor.

Energy Use

Pipeline construction and operation would require 1.53 percent (35,000 BPD capacity) and 1.79 percent (65,000 BPD capacity) of the potential energy transported.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Paleontology

Some subsurface vertebrate fossils may be permanently damaged or destroyed during construction, maintenance or repair.

Cultural Resources

Some subsurface sites may be permanently damaged or destroyed during construction, maintenance or repair.

Visual Resources

The visual resource in 2 areas (MP 587-589 [Kane Springs] and 605-609 [Moab Canyon]) would be permanently altered, resulting in a cumulative impact in each area due to existing rights-of-way at both locations.

ALTERNATIVES

Discussion of environmental consequences for the alternatives (including Impact Assessment, Unavoidable Adverse Impacts, Relationship Between Local Short-Term Use and Long-Term Productivity, and Irreversible and Irretrievable Commitment of Resources) is not repeated where it is consistent with that for the proposed action. The following discussions of the alternatives reflect only those differences from the proposed action.

Douglas Pass (AB)

Paleontology

This alternative would cross approximately 41 miles of formations known to contain significant fossil localities (Table 3-5).

Visual Resources

Table 3-6 provides a summary of significant impacts for the alternatives. Three locations along the Douglas Pass alternative would have significant visual resource impacts. They would occur at MP 27-29 at Douglas Pass, MP 32, and MP 40-43. The impacts would be similar to those in the Baxter Pass area, but would occur more frequently here because of the limited space available for additional pipeline ROW. Successful revegetation would reduce or obscure visual impacts at MP 32 and MP 40-43 in 3-5 years. The rocky surface at MP 27-29 would prevent revegetation over the short-term, so the visual impacts at this location would be long term.

Table 3-5. LOCATIONS OF FORMATIONS ALONG THE ALTERNATIVES THAT CONTAIN POTENTIALLY SIGNIFICANT FOSSILS

Milepost	Formation or Group
Douglas Pass (AB)	
0 - 39	Wasatch[a]
39 - 41	Green River, Wasatch[a]
Little Mountain (DF)	
28 - 31	Wasatch[b]
31 - 37	Green River[b]
38 - 41	Green River[b]
45 - 46	Green River[b]
46 - 49	Wasatch[b]
49	Green River[b]
49 - 52	Wasatch[b]
53 - 54	Wasatch[b]
Pine Mountain (DEG)	
3 - 9	Wasatch[b]
9 - 10	Green River[b]
10 - 11	Wasatch[b]
12 - 18	Wasatch[b]
18 - 19	Green River[b]
19	Wasatch[b]
19 - 20	Green River[b]
20 - 23	Wasatch[b]

[a]Cashion, W.B. 1973. Geologic and structure map of the Grand Junction Quadrangle, Colorado and Utah. USGS Miscellaneous Investigations Series Map I-736, 1:250,000.

[b]Bradley, W.H. 1961. Geologic map of a part of Southwestern Wyoming and adjacent States. USGS Miscellaneous Investigations Series Map I-332, 1:250,000.

Table 3-6. SUMMARY OF SIGNIFICANT VISUAL RESOURCE IMPACTS FOR ALTERNATIVES

Milepost	General Description	Short-Term Impact (3 to 5 years)	Long-Term Impact (5 years or longer)
Alternatives			
Douglas Pass (AB)			
MP 27-29	Mountainous		X
MP 32	Mountainous	X	
MP 40-43	Mountainous	X	
Little Mountain (DF)			
MP 21-24	Hills/river	X	
Pine Mountain (DEG)			
MP 21-23	River valley	X	
MP 26-27	Canyon	X	
MP 39-41	Mountainous	X	

Prime and Unique Farmland

This alternative would disturb an estimated six acres of Prime, no Unique, 14 acres of Statewide Importance, no Locally Important, and nine acres of Other Farmland (SCS 1979a, 1979b, 1979c). However, none of these lands would be irreversibly converted to other uses, and the viability of these lands would not be diminshed.

Little Mountain (DF)

Paleontology

Approximately 19 miles of formations known to contain significant fossil localities (Table 3-5) would be crossed.

Visual Resources

There would be significant impact to the visual resources between MP 21 and MP 24 north and south of where the alternative crosses the Green River at Little Hole. Removal of pinon-juniper from the hillside would create a contrast to the line and color of the vegetation visible to recreation users near the Little Hole area of the Flaming Gorge National Recreation Area, Ashley National Forest. Significant differences in the line and color would diminsh in 3-5 years as vegetation is reestablished.

Prime and Unique Farmland

This alternative would disturb an extimated 18 acres of Statewide Important Farmland but no known areas of Prime, Unique, Locally Important, or other Farmland (Erickson 1980; Millsap 1979). However, none of these lands would be irreversibly converted to other uses, and the viability of these lands would not be diminshed.

Pine Mountain (DEG)

Paleontology

This alternative would cross approximately 19 miles of formations known to contain significant fossil localities (Table 3-5).

Visual Resources

There would be 3 areas with significant visual resource impacts along this alternate route. Two areas, MP 21-23 and MP 26-27 are identical to MP 821- 823 (Green River near Browns Parks) and MP 826-827 (Jesse Ewing Canyon), which are discussed under Mainline. The third location would occur at MP 41-42 on Pine Mountain, Wyoming. Coniferous forest and steep, rocky slopes are found at this location. Pipeline construction would create moderate contrasts to the form and line of the vegetation. Removal of vegetation would expose a light-colored, rocky surface, creating a strong contrast to the surrounding green vegetation. This contrast would be seen in the background (5-15 miles) of views from the nearest travel routes. As revegetation progresses, contrasts would become less noticeable. However, it will take 3-5 years to reduce the visual impact in this location and as much as 30 years to restore it to near original condition.

Prime and Unique Farmland

Approximately 12 acres of Statewide Important Farmland would be disturbed by this alternative; however, no known areas of Prime, Unique, Locally Important or Other Farmland would be disrupted (Erickson 1980; Millsap 1979; Robinson 1979). However, none of these lands would be irreversibly converted to other uses, and the viability of these lands would not be diminished.

No Action

Energy Use

The effect of the no action alternative would be that the energy that would have been used in construction would not be used for that purpose. However, the 35,000 to 65,000 BPD that would have been available for use in the chemical industry and other energy use areas would not be available. Instead, these petroleum products (liquid hydrocarbons) would have to be re-injected (with possible loss) or distributed in some other manner, such as, by truck or rail. These other modes of transportation would be less energy efficient.

Delay of Project

Social and Economic Conditions

The effect of the delay of project would be that the lost revenue to MAPCO is estimated to be about $60,000 per day plus the increased cost of materials and labor for construction due to inflation (estimated to be at least 1 percent per month). The other effect of this alternative is decreased efficiency of processing plant

operations due to recycling the liquids. Reinjection of the liquids could result in their loss.

INFORMATION FOR THE COMPARISON OF ALTERNATIVES

Chapter One, Alternatives, briefly describes 7 alternatives which were analyzed in detail. Five of these are alternative route segments. In addition, the Delay of Project and No Action Alternatives were analyzed. The 5 alternative route segments provide 2 comparisons. Comparison One compares the Baxter Pass (AC) segment of the Proposed Action with the Douglas Pass (AB) alternative. Comparison Two compares the East of Little Mountain (DEF) segment of the proposed action with the Little Mountain Alternative (DF) and the Pine Mountain Alternative (DEG).

First, Table 3-7 contains general project information regarding the proposed action and alternatives such as number of miles, number of acres disturbed, etc. Second, Table 3-8 displays a Summary of Physical Information for Comparison One and Two. Table 3-9 contains a Summary of Biological Information for the two comparisons. In addition, Table 3-10 contains a summary of Human Use Information for comparing the alternatives.

Due to the close proximity of the route segment alternatives (maximum 25 miles) there are aspects of the environment which provide no basis for comparison.

PREFERRED ALTERNATIVE

The Bureau of Land Management has selected preferred alternatives based on an analysis of likely impacts and potential for mitigation of these impacts. For Comparison One, the BLM has selected the Baxter Pass Alternative (AC) as proposed by the applicant. For Comparison Two, the selection is the Pine Mountain Alternative (DEG).

Table 3-7. SUMMARY OF COMPARITIVE INFORMATION FOR PROPOSED ACTION AND ALTERNATIVES

Information for Comparison	Total Proposed Project	Comparison One		Comparison Two			No Action	Delay of Project
		AC[a] Baxter Pass, CO	AB Douglas Pass, CO	DEF[a] East of Little Mountain UT,WY	DF Little Mountain UT,WY	DEG Pine Mountain UT,WY		
Miles	1,172	74	72	63	56	68	0	1,172
Acres disturbed	7,102	436	448	382	339	412	0	7,102
Miles near existing utilities[b]	1,083	71	72	35	22	66	0	1,083
Percent of total near existing utilities	92	96	100	57	40	95	0	92
Miles not near existing utilities	89	3	0	27	32	4	0	89
Percent of total not near existing utilities	8	4	0	43	60	5	0	8
Miles in proposed ACEC	4	0	0	4	0	4	0	4
Miles in Flaming Gorge National Recreation Area	1	0	0	1	1	0	0	1
Number of major rivers crossed	12	0	0	1	1	1	0	12
Number of proposed Wild and Scenic rivers crossed	1	0	0	1	1	1	0	1
Gallons of estimated fuel use for construction	968,072	61,124	59,472	52,038	46,254	56,158	0	968,072

[a]Proposed action.

[b]Includes 416 miles of existing MAPCO ROW (35% of total).

Table 3-8. SUMMARY OF PHYSICAL INFORMATION FOR COMPARISON OF PROPOSED ACTION AND ALTERNATIVES

Information for Comparison	Comparison One		Comparison Two		
	(AC)[a] Baxter Pass, CO	(AB) Douglas Pass, CO	(DEF) East of Little Mountain UT,WY	(DF) Little Mountain UT,WY	(DEG) Pine Mountain UT,WY
Number of miles crossed with potentially[b] significant paleontological resources	39	41	18	19	19
Estimated soil loss attributed to project (tons)	5,384	3,283	3,579	5,409	4,559
Soil erosion (water-induced) susceptibility	mod. to high[c]	mod. to high[c]	mod. to high[c,d]	mod.[c]	mod.[c]
Potential for mitigation[e]	mod.	low[f]	low	mod.	mod.

[a] Proposed Action.

[b] Analysis based on Madison's priority rank for Utah of significant vertebrate fossils and fossils present based on literature compilation and review.

[c] Based on K values where <.2 = low, .2-.4 = moderate; >.4= high.

[d] High hazard area applies to Red Creek Badlands area only.

[e] Principle items considered in determination includes relative cost potential for successful reseeding, ability to save topsoil and expected success of erosion and water diversion techniques. Where the alternatives are essentially similar, the rating is based on these differences between critical areas.

[f] Low potential for mitigation refers only to the Douglas Pass portion (MP 28-30) of the Douglas Pass Alternative. This area has exposures of highly fractured shale that are highly susceptible to landslides. Interms of mitigation, the potential success would be quite low in this area due to negligible existing soil resource.

Table 3-9. SUMMARY OF BIOLOGICAL INFORMATION FOR COMPARISON OF PROPOSED ACTION AND ALTERNATIVES

Information for Comparison	Comparison One		Comparison Two		
	AC[a] Baxter Pass, CO	AB Douglas Pass, CO	DEF[a] East of Little Mountain UT,WY	DF Little Mountain UT,WY	DEG Pine Mountain UT,WY
Comparison of vegetative types disturbed (acres)					
pinyon-juniper	249	109	115	78	79
coniferous forest	36	30	0	36	18
sagebrush	61	127	218	194	265
desert shrub	139	182	0	0	0
agriculture	485	448	382	338	410
Maximum harvestable board feet of timber estimated to occur	180,000	150,000	0	180,000	180,000
Estimated number of Threatened or Endangered Species likely to occur along various routes	4	4	5	5	5
Number of acres of wild horse habitat traversed	0	0	73	0	212
Number of acres of crucial wildlife habitat disturbed (percent of total)[b]					
big game	48 (<1%)	121(<1%)	182(<1%)	188 (<1%)	200 (<1%)
chuker	18 (8%)	12 (6%)	0	0	0
sage grouse	0	0	61 (<1%)	48 (<1%)	24 (<1%)
fish habitat[c]	-	-	+	+	+
TOTAL	66	133	243	236	224

[a]Proposed Action.

[b]Percent of total available habitat within study area (generally, a 20-mile corridor).

[c]- = no known habitat crossed and + = known habitat crossed.

Table 3-10. SUMMARY OF HUMAN USE INFORMATION FOR COMPARISON OF PROPOSED ACTION AND ALTERNATIVES

Information for Comparison	Comparison One		Comparison Two		
	AC[a] Baxter Pass, CO	AB Douglas Pass, CO	DEF[a] East of Little Mountain UT,WY	DF Little Mountain UT,WY	DEG Pine Mountain UT,WY
Cultural Resources					
Expected Surface Site Density	high	moderate to high	moderate to high	high in small areas moderate below 7500' low above 7500'	high in small areas moderate below 7500' low above 7500'
Expected Subsurface Site Density	high in alluvial areas	high in alluvial areas	high in alluvial areas	high in alluvial areas	high in alluvial areas
Expected Significance for Local Research Goals	high	high	high	high	high
Expected Significance in Terms of Eligibility to National Register	low	high	moderate to high	moderate to high	moderate to high
Miles of VRM Classes Crossed					
Class I	0	0	0	0	0
Class II	34	34	15	18.5[b]	16
Class III	18	37	9	13.5	9
Class IV	20	30	33	24	43
Class V	0	0	6	0	0
Miles of significant visual impacts	2.5	5.5	3	3	5
Wilderness					
boundaries crossed	0	0	0	0	0
access increased by ROW	0	0	0	0	0
areas within two miles	1	0	0	3	3
Number of acres of Important Farmland disturbed					
Prime and Unique	0	6	0	0	0
state	0	14	12	18	12
local	0	0	0	0	0
other	0	9	0	0	0

[a]Proposed Action.

[b]One of these miles is in a potential ACEC for visual resources.

CHAPTER FOUR
CONSULTATION AND COORDINATION

THE SCOPING PROCESS

Regulations for implementing the National Environmental Policy Act (40 CFR, Part 1501.7) require an early and open scoping process. During this process, the scope of issues to be analyzed and significant issues related to the proposed action were identified. Information obtained during the scoping process was one of the sources used to determine significant impacts to be addressed in detail in the EIS.

Additional purposes of the scoping process were to inform affected federal, state and local agencies and other interested persons about the proposal, and to identify existing environmental reports and information related to the proposal. Related consultation and review requirements were also identified and addressed in the EIS (Chapter One, Authorizing Actions). The purpose of the scoping process is to enhance better decisions through the achievement of these purposes. By emphasizing significant issues, the magnitude of paper work and the length of the statement are also reduced.

The scoping process involved discussions with the public and resource specialists and managers of BLM and other relevant agencies. Written comments were received and compiled as a result of A-95 Clearing House distribution, Federal Register announcements, news releases, and articles about the proposal. Comments were also solicited during public scoping meetings.

Scoping Meetings

The regulations direct that the lead agency invite participation of affected federal, state and local agencies and other interested persons to join in the scoping process. Eighteen public meetings were held, as indicated in Table 4-1. A summary of each meeting, attendance lists, written comments solicited during the meetings, and public announcements are on file with BLM, NMSO.

A brief summary of each meeting follows:

Santa Fe, NM

Two scoping meetings were held in Santa Fe, New Mexico. The target group for the first meeting was state and federal agencies. Thirteen individuals attended. The comments dealt primarily with routing along existing rights-of-way, coordination with the Fish and Wildlife Service and the Army Corps of Engineers. The second meeting was open to the general public and nine persons attended. The comments received were all of a general nature.

Denver, CO

Two scoping meetings were held in Denver, Colorado. The target group for the first meeting was state and federal agencies. Nine individuals representing 8 different agencies attended. Comments included the suggested use of brush beaters by Colorado Division of Wildlife to clear brush in order to facilitate vehicle movement instead of blading the ROW. The National Park Service indicated that approval of an alternative through Arches National Park is unlikely and the Environmental Protection Agency expressed concerns on river, stream and wetland area crossings.

The second meeting was open to the general public and 9 individuals attended. Concerns regarding wilderness conflicts and impacts to farmlands were voiced as well as comments of a general nature.

Grand Junction, CO

The scoping meeting in Grand Junction, Colorado was open to the general public and 9 individuals attended. Comments related to impacts to private land, Army Corps of Engineers Section 404 permits and issuance of non-exclusive rights-of-way in specific areas of the BLM, Grand Junction District.

Table 4-1. PUBLIC SCOPING MEETINGS

Date (1979)	Location
August 15[a]	Santa Fe, NM
August 21[a]	Denver, CO
August 22	Grand Junction, CO
August 23	Durango, CO
August 28[a]	Salt Lake City, UT
August 28	Rock Springs, WY
August 29	Moab, UT
August 30	Vernal, UT
August 30[a]	Cheyenne, WY
November 6	Nageezi, NM (Navajo Tribe)
November 7	Ojo Encino, NM (Navajo Tribe)
November 13	Santa Ana Pueblo, NM
November 13	Zia Pueblo, NM
November 27	Ignacio, CO (So. Ute Tribe)

[a]Afternoon and evening sessions were held at these locations.

Durango, CO

The scoping meeting in Durango, Colorado was open to the general public and 10 individals attended. Comments dealt with placing the proposed pipeline within Northwest Pipeline Company's existing right-of-way in the Mancos Ranger District and preliminary discussions to establish corridors by Dolores County. Other comments were of a general nature; however, the consensus was that the line had been well routed.

Salt Lake City, UT

Two scoping meetings were held in Salt Lake City, Utah. The target group for the first meeting was state and federal agencies. Ten individuals attended. The comments included the identification of a proposal to construct a new road in Browns Park, Utah to connect with Wyoming and Colorado, and concerns about destruction of riparian wildlife habitat in canyons. In addition, potential conflicts relating to development of oil shale, coal, road construction and water resource projects were discussed. Need for coordination between the U.S. Fish and Wildlife Service and the Utah Department of Natural Resources was stressed.

The second meeting was open to the general public and 8 individuals attended. Comments received were of a general nature.

Rock Springs, WY

The scoping meeting in Rock Springs, Wyoming was open to the general public and 12 individuals attended. The primary concerns and comments involved the Little Mountain slide area, the Red Creek Badlands, and Flaming Gorge National Recreation Area. Industry representatives had general comments about the terminus point, available facilities and conflicts with possible future proposals for other pipelines.

Moab, UT

The scoping meeting in Moab, Utah was open to the general public and 12 individuals attended. A concern was raised regarding the narrowness of Moab Canyon which is already used for several other ROWs. The principle comments related to water quality, the Moab wetlands and surface protection. Surface protection concerns included blading, stockpiling topsoil, double ditching in order to save topsoil, and construction practices to minimize erosion.

Vernal, UT

The scoping meeting in Vernal, Utah was open to the general public and 12 individuals attended. Comments received dealt with impacts to paleontological resources and existing studies of these were discussed. In addition, paralleling Northwest's pipeline across the Flaming Gorge National Recreational Area was discussed.

Cheyenne, WY

Two scoping meetings were held in Cheyenne, Wyoming. The target group for the first meeting was state and federal agencies. Ten individuals attended the meeting. Many general comments were obtained. Specific concerns dealt with the U.S. Fish and Wildlife Service Threatened and Endangered Species Consultations for black-footed ferret, pipeline construction at Green River crossings, water rights and routing concerns. Cultural, historical and archeological concerns were also raised, specifically the suggestion of slip boring under any existing Historical sites in order to minimize surface disturbance was raised.

The second meeting was open to the general public and 7 people attended. The need for a LHC pipeline was stressed in addition to other general comments received.

Nageezi and Ojo Encino, NM (Navajo Indian)

Scoping meetings were held with the Navajo Indian Tribe at Chapter Houses in Nageezi and Ojo Encino. Sixty people attended the meeting at Nageezi and 25-30 people attended at Ojo Encino. Concerns relating to easement consent and payment were of primary concern. Other comments dealt with Historic and Archeological concerns, the possibility of tapping into the line and revegetation practices.

Santa Ana Pueblo, NM

A scoping meeting was held for the Santa Ana Pueblo Indian Tribal government. The administrative officer of the Santa Ana Pueblo was present. The principle concerns were pipeline ruptures and potential resultant damage to livestock, crops and the health and safety of the pueblo residents.

Zia Pueblo, NM

A scoping meeting was held for the Zia Indian Pueblo Tribal government. The Pueblo administrator and assistant were present. The tribes principle comments related to historical and archeological concerns, pipeline ruptures, reclamation, erosion control and relationship of the proposed pipeline to the Shell CO_2 pipeline.

Ignacio, CO

A scoping meeting was held for the Southern Ute Indian Tribe in Ignacio, Colorado. The chairman and 8 councilmen were present reclamation was of primary concern. General concerns regarding wildlife and cultural resources were expressed. Other general comments were provided.

Tri-State Alternatives

Routing in the tri-state area (northwestern Colorado, northeastern Utah and southern Wyoming) was the most difficult problem identified during the scoping process. Six special meetings[a], numerous personal and telephone communications, and several on-ground and aerial reconnaisance trips were conducted in an effort to identify the most environmentally reasonable alternatives for detailed analysis.

In these areas, numerous potential resource and land use conflicts exist which inhibited the identification of a single alternative satisfactory to the many BLM and FS specialists and managers involved. The primary sources of potential conflict are:

- unstable and erosive soils (CO, UT, WY)
- Little Mountain mudslide (WY)
- potential Areas of Critical Environmental Concern (ACEC) due to fragile soils and critical watershed (Red Creek Badlands) (WY)
- crucial wildlife use areas (CO, UT, WY)
- Flaming Gorge Reservoir and National Recreation Area (UT, WY)
- Visual Resource conflicts and easements (UT)
- Wild and Scenic River Study Area (Green River, UT)
- Cultural Resource conflicts (CO)
- Threatened or Endangered Species (CO, UT)
- ROW grant through Browns Park in Utah may provide further justification to a proposed road paving project (UT)
- potential increased sedimentation in the Green River may disturb a Blue Ribbon trout fishing area and may increase salinity of Green River water delivered to Mexico (UT)

Summary

In addition to the issues identified in the tri-state area, several other key issues of concern were identified during the scoping process:

- potential conflict with single use purpose of Arches National Park in Utah
- narrowness of Moab Canyon (UT) with respect to present and future demand for ROW grants through the canyon
- potential disturbance of wildlife habitat due to the crossing of the Colorado River and the Moab Wetlands, UT
- potential landslide areas in Baxter and Douglas passes
- potential resource conflicts due to traversing Cañon Pintado Historic District located north of Douglas Pass
- potential conflicts due to crossings of proposed or designated National Scenic and Historic Trails
- potential disturbance of riparian habitat
- potential cumulative impacts and conflicts with other proposed and existing projects
- potential disturbance of Indian grave sites
- concern for pipeline spill effects and safety
- potential conflict with paleontological resources
- concern that the EIS process would take longer than necessary and cause undue delay in getting a much needed transportation system operational
- Proposed water development projects (White River Dam, UT, Animas-La Plata Project, CO)

[a] Summaries of these meetings and numerous contact reports are on file at BLM, NMSO.

- Wild and Scenic River Study Area (Dolores River, CO)
- potential conflicts with threatened or endangered species
- potential impacts to crucial wildlife habitat (game species)

As a result of the scoping process, MAPCO revised its proposed action to reflect five changes in the original route:

1. Instead of skirting Arches National Park by the shortest feasible route, the applicant would continue north from Moab Canyon following a highway to just south of Thompson, Utah before turning east.

2. Instead of using Douglas Pass, the applicant proposes to traverse Baxter Pass.

3. Instead of using Sears Creek and Red Creek canyons as access through northeastern Utah, the applicant proposes the use of Rye Grass and Jesse Ewing canyons.

4. Instead of going through the proposed South Haystack strip mine (WY), the applicant proposes that the Northwest Gathering Line skirt the involved area to the south (Map 18, MP NWL 10).

5. Instead of crossing the Green River at the southern outskirts of the City of Green River (WY), which is in a crowded corridor near a developed recreation area, the applicant proposes crossing the river at Davis Bottom at the north end of Flaming Gorge National Recreation Area, above the reservoir level (Map 15, MP WL 10-11).

Advisory Council on Historic Preservation

Colorado

- A-95 Clearing Houses
- Department of Health
- Department of Highways
- Department of Water Resources
  - Durango
  - Steamboat Springs
- Division of Wildlife Offices
  - Denver
  - Ft. Collins
  - Montrose
- Geological Survey
- Historical Society
- State Historic Preservation Officer

Department of Agriculture

- Forest Service Offices
  - Rocky Mountain Region, Denver, CO
  - Intermountain Region, Ogden, UT
  - Ashley National Forest, Vernal, UT
  - San Juan National Forest, Durango, CO
- Soil Conservation Service Offices
  - Albuquerque, NM
  - Casper, WY
  - Cheyenne, WY
  - Cortez, CO
  - Craig, CO
  - Denver, CO
  - Evanston, WY
  - Norwood, CO
  - Rock Springs, WY
  - Salt Lake City, UT
  - Temple, TX

Department of Interior

- Bureau of Indian Affairs
- Bureau of Land Management
  - New Mexico State Office

Department of the Interior (continued)

- Roswell District
- Albuquerque District
  - Farmington Resource Area
  - Taos Resource Area
- Colorado State Office
  - Montrose District
    - Durango Resource Area
  - Grand Junction District
  - Craig District
    - White River Resource Area
- Utah State Office
  - Moab District
    - Monticello Resource Area
  - Vernal District
  - Salt Lake District
- Wyoming State Office
  - Rock Springs District
    - Kemmerer Resource Area
  - Rawlins District

Water and Power Resources Service
- Durango, CO
- Manila, UT
- Salt Lake City, UT

Heritage Conservation, and Recreation Service
- Regional Office, Albuquerque, NM
- Regional Office, Denver, CO

National Park Service
- Denver Service Center, Denver, CO
- Rocky Mtn. Regional Office, Denver, CO
- Southwest Regional Office, Santa Fe, NM
- Arches National Park
- Canyonlands National Park
- Dinosaur National Monument
- Mesa Verde National Park

Office of Environmental Project Review, Washington, D.C.

U.S. Fish and Wildlife Service
- Regional Office, Albuquerque, NM
- Regional Office, Denver, CO
- Denver Wildlife Research Center Field Station, Ft. Collins, CO
- Albuquerque Area Office
- Cheyenne Area Office
- Denver Area Office
- Pierre, SD Office
- Rapid City, SD Office
- Salt Lake City Area Office

U.S. Fish and Wildlife Service, Endangered Species Recovery Teams
- Bald Eagle Recovery Team (northern states), Fargo, ND
- Bald Eagle Recovery Team (southwest region), Phoenix, AZ
- Black-Footed Ferret Recovery Team, Brookings, SD
- Colorado River Fishes Recovery Team, Salt Lake City, UT

Department of the Interior (continued)

Rio Grande Fishes Recovery Team, Austin, TX
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New Mexico

A-95 Clearing Houses
Department of Game and Fish, Santa Fe
Environmental Improvement Division
Natural Resources Department
State Archaeologist
State Heritage Program, Santa Fe
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A-95 Clearing Houses
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- S.E. Utah Association of Governments
- State Highway Department
- State Historic Preservation Officer
- Utah Council of Governments

Wyoming

- A-95 Clearing Houses
- Department of Environmental Quality, Cheyenne
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ACEC - Area of Critical Environmental Concern. Refers to areas within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

ACRE FOOT - the volume (as of water) that would cover 1 acre to a depth of 1 foot.

ANCILLARY FACILITIES - those structures (pump stations, power and communications lines, cathodic protection systems) which are necessary for the continuous operation or maintenance of the pipeline.

ANGLE OF OBSERVATION - the vertical angle between a viewer's line of sight and the slope or object being viewed.

AUTHORIZED OFFICER - an employee of the BLM to whom has been delegated by the BLM New Mexico State Director the duties and responsibilities for issuance, modification, protests, suspension, renewal and termination actions associated with the right-of-way and related facility permits proposed in this document.

BARRELS PER DAY (BPD) - a unit measuring the rate at which petroleum is produced, transported or consumed. (Barrel is a unit of volume measure equal to 42 U.S. gallons).

BLANKETED - covering an area to be blasted with heavy mats to reduce the extent of flying debris from the blasting.

BORROW DITCH - excavation along side a roadway. The material excavated is used to construct the roadway embankment.

BTU - British thermal unit. The amount of heat needed to raise the temperature of one pound of water one degree farenheit; equal to approximately 252 calories.

BUTANE - general nomenclature of certain compounds of the alkane family consisting of four carbon atoms and ten hydrogen atoms more commonly referred to as (1) Normal Butane, (2) Iso-Butane, or (3) Butanes; occurs in natural gas, crude oil, and is produced by petroleum cracking.

CHECK VALVE - a valve with a free-swinging tongue or clapper that permits liquid to flow in one direction only, as in a pipeline.

COATING - a field operation for preparing a pipeline to be lowered into the ditch. The line is coated with an inert material, then spiral wrapped with a tough, inert wrapper. Machines ride the pipe, and coat and wrap in one continuous operation. This process protects the pipeline from corrosion. For some pipeline jobs the pipe may be coated and wrapped at a mill or construction yard site. Any damage to the coating from transportation or handling can be corrected before the pipe is installed.

COMMON CARRIER - a transporter of commodities for hire to the public and regulated by some agency of the government.

COMPACTION - the process by which soil grains are rearranged to decrease void space, thereby increasing the weight of solid material per cubic foot.

CONTRAST - the difference between adjacent parts in color and form, as used in BLM VRM System.

CROWN - center of a roadway elevated above the sides.

CRITICAL HABITAT - any air, land, or water area, including any elements thereof, which the Secretary of the Interior or the Secretary of Commerce has determined (and has announced in the Federal Register) to be essential to the survival of wild populations of a Threatened or Endangered Species or to be necessary for their recovery to a point at which the measures provided pursuant to the ESA are no longer necessary. Constituent elements of Critical Habitat may include, but are not necessarily limited to land, air, and water areas; physical structure and topography; flora, fauna, and climate; and the quality and chemical content of soil, water, and air. (The words "Critical Habitat" must always be capitalized when referring to officially determined Critical Habitat, pursuant to Section 7 of the ESA.)

CRUCIAL HABITAT - portion of the habitat of sensitive species that if destroyed or adversely modified could result in their being listed as threatened or endangered pursuant to Section 4 of the ESA, or in some category implying endangerment by a state agency or legislature. Examples of crucial habitat areas are booming grounds, nesting areas, brood rearing areas, winter ranges, migration routes, anadromous fish spawning grounds, fish rearing waters, or any habitat necessary to the survival of the species in question at important periods of their life cycles.

CUT-AND-FILL - process of earth moving by excavating part of an area and using the excavated material for adjacent embankments or fill areas.

DITCH - a small artificial channel cut through earth or rock.

DIVERSION DAM - a barrier built across a stream to divert all or some of the water.

EASEMENT - an interest in land owned by another that entitles its holder to a specific limited use.

ETHANE - a compound of the alkane family consisting of two carbon atoms and six hydrogen atoms; under standard conditions, a colorless, odorless gas

with a freezing point of -183.3°C., and a boiling point of -88.6°C. Used as a fuel and for organic synthesis.

FORM - the mass or shape of an objective or objects that appears unified, such as in the shape of the land surface, as used in BLM VRM System.

GAS PROCESSING PLANT - a plant where natural gas is processed to remove liquid components and contaminants dissolved in the gas.

GATE VALVE - a valve with a solid gate closing element that fits tightly over an opening through which petroleum products pass in a pipeline; can be shut off to prevent flow.

GRADE - degree of slope of a road, channel, or natural ground.

GRANT (see EASEMENT) - a document authorizing non-possesive, non-exclusive right to use federal land for a limited purpose.

HAZARDOUS CONDITION - a situation in a pipeline system during which there is an unintentional release of product from the system which would be hazardous to life or property.

HAZARDOUS MILE-HOUR - the risk exposure where products escape from the pipeline causing hazardous conditions on one mile of pipeline for a duration of one hour.

HYDROCARBON, LIQUID - those compounds of the general families of alkane or alkyl groups consisting of carbon atoms and hydrogen atoms that are in the liquid phase either by natural occurrence or by means of pressure and/or temperature manipulation. When used in this document, liquid hydrocarbons refers to and is synonomous with natural gas liquids.

HYDROSTATIC TESTING - filling a pipeline or tank with water under pressure to test for tensile strength; its ability to hold pressure without rupturing.

INDIAN LANDS (by type) - (1) Individual Trust (Allotment): land held in trust by the United States for the benefit of individual Indians and land held by individual Indians subject to federal restrictions against alienation or encumbrance. Right-of-Way requires consent from both individual Indian and BIA. (2) Tribal Trust: lands held in trust by the U.S. for a tribe or title which is held by any tribe subject to federal restrictions against alienation or encumbrance. Right-of-Way requires consent in writing from both Tribal Council and BIA. (3) Tribal Fee: same as any private land; the BIA is not involved.

ISO-BUTANE - a compound of the alkane family consisting of four carbon atoms and ten hydrogen atoms, an isomer of normal butane also known as 2-methyl propane; under standard conditions, a colorless stable gas with a freezing point of -159.6°C., and a boiling point of -11.73°C., used as a chemical intermediate, refrigerant and fuel.

LEAK SECTION - a section of pipeline containing a leak which is isolated between two gate valves.

LIGHT LIQUID HYDROCARBONS (LHC) - low molecular weight paraffin hydrocarbons mainly ethane, propane, butane, iso-butane and natural gasoline.

LINE - the path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within the landscape, lines may be found as ridges, skylines, structures, changes in vegetative types or individual trees and branches, as used in BLM VRM System.

MICROWAVE - an electromagnetic wave which has a wavelength between about 0.3 and 30 centimeters, corresponding to frequencies of 1-100 gigaherz; however, there are no sharp boundaries distinguishing microwaves from infrared and radio waves.

MIXED STREAM - a mixture of hydrocarbons in the liquid state moving in a pipeline.

NATURAL GASOLINE - a mixture of compounds in the alkane family consisting of various numbers of carbon atoms and hydrogen atoms, most usually less than ten carbon atoms and twenty-two hydrogen atoms, and more than four carbon atoms and ten hydrogen atoms, although not limited to this range. Usually a liquid at standard conditions with a vapor pressure less than one atmosphere at 60°F. It is recovered from natural gas by compression, absorption, and distillation. Used as a fuel, chemical plant feed stock and motor fuel blending.

NATURAL SAG - natural axial elastic deformation of unsupported pipe because of gravity.

NGL - natural gas liquids; a mixture of compounds in the alkane family normally associated with natural gas and then removed by various process methods, and can contain some inorganic compounds such as carbon dioxide and certain sulfur compounds. The alkane compounds contain various numbers of carbon atoms and hydrogen atoms, usually less than ten carbon atoms and twenty-two hydrogen atoms, although not limited to this range.

PIPELINE MILE-HOUR - the risk exposure on one mile of pipeline for a duration of one hour.

POLYETHYLENE - a thermoplastic material composed of polymers of ethylene.

PROPANE - a compound of the alkane family consisting of three carbon atoms and eight hydrogen atoms; under standard conditions a colorless, odorless gas with a freezing point of -187.69°C., and a boiling point of -42.07°C.; used as a refrigerant, fuel and a chemical intermediate.

RECTIFIER - a nonlinear circuit component that allows more current to flow in one direction than the other; ideally, it allows current to flow in one direction unimpeded but allows no current to flow in the other direction.

RIGHT-OF-WAY (ROW) - (1) the federal land authorized to be occupied under the proposed grant for the MAPCO Project, (2) applies to other land for which permission has been obtained for use by MAPCO.

RIPPER TOOTH - a stout steel tooth-shaped implement inserted into the ground and pulled by a tractor to break up hard ground or soft rock prior to ditch excavation.

RIPRAP - non-erosive material placed on a stream bank and bed for protection from stream or wave action; can consist of broken rock or other materials.

ROCKY MOUNTAIN OVERTHRUST AREA - an area of potential oil and gas resources lying in a generally north-south direction through Montana and along the western boundary of the states of Wyoming, Colorado and northern Utah.

SCENIC QUALITY - the degree of variety within a landscape, measured as distinctive, common, or minimal. The measurement of scenic quality is based on the premise that landscapes with the most variety or diversity have the greatest potential for high scenic value, as used in BLM VRM System.

SCOUR ACTION - to abrade and wear away; used to describe the wearing away of terrace or diversion channels or stream beds.

SCRAPER TRAP - a facility on a pipeline for inserting and retrieving a scraper or "pig." The trap is essentially a "breech-loading" tube isolated from the pipeline by valves. The scraper is loaded into the tube like a shell into a shotgun. A hinged plug is closed behind it, and line pressure is then admitted to the tube behind the scraper. A valve is opened ahead of the scraper and it is pushed into the line and moved along by the liquids.

SPUR - a short pipeline for connecting a plant to a main pipeline.

STOPPLES - a specialized plugging apparatus inserted into a pipeline for temporary stoppage of flow.

SURFACE MANAGEMENT AGENCIES - the Bureau of Land Management, Forest Service, Bureau of Indian Affairs, National Park Service and state land agencies.

TAMP - compaction of loose soil into a firmer state by dynamic means.

TELEMETERING - transmitting the readings of instruments to a remote location by means of wires, radio waves, or other means; also known as remote metering or telemetry.

TERRACING - constructing levees across a slope to minimize erosion by directing water flow across the slope rather than directly down the slope.

TOPSOIL - surface soil, usually corresponding with the A horizon, as distinguished from subsoil.

TWO-TONING - a pipeline construction technique used on steep slide slopes whereby grading is done at two levels or steps; the upper level used for excavating and installation, and the lower level used for vehicle passage.

VRM (VISUAL RESOURCE MANAGEMENT) - the planning, design, and implementation of BLM management objectives to provide acceptable levels of visual impacts for all BLM resource management activities.

1. Class I. This class provides primarily for natural ecological changes; however, it does not preclude very limited management activity. Any contrast created within the characteristic environment must not attract attention. It is applied to wilderness areas, some natural areas, wild portions of the Wild and Scenic Rivers, and other similar situations where management activities are to be restricted.

2. Areas of Critical Environmental Concern for Scenic Values. The ACEC for scenic values, as defined are lands of high scenic value of relative scarcity. For this reason, priority identification must be made for presentation in the management framework process. Conformance with VRM Class II objectives constitutes interim management.

3. Class II. Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape. A contrast may be seen but should not attract attention.

4. Class III. Contrasts to the basic elements (form, line, color, texture) caused by a management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape.

5. Class IV. Constrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, texture) inherent in the characteristic landscape.

6. Class V. Change is needed or change may add acceptable visual variety to an area. This class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding landscape. This class would apply to areas identified in the scenic evaluation where the quality class has been reduced because of unacceptable cultural modification. The contrast is inharmonious with the characteristic landscape. It may also be applied to areas that have the potential for enhancement, i.e., add acceptable visual variety to an area/site. It should be considered an interim or short-term classification until one of the other VRM class objectives can be reached through rehabilitation or enhancement. The desired Visual Resource Management class should be identified.

VISUAL SENSITIVITY - a measure of viewer interest in the scenic qualities of the landscape, as used in BLM VRM System.

WALKED-IN - compaction of backfill in a ditch by the tread of the wheel of a vehicle moving down the ditch line, the weight of the vehicle furnishing the dynamics for compaction.

WATER BARS - diversion levees constructed on a slope to divert water flow away from down the ditch line.

WELDING - joining two metals by applying heat to melt and fuse them.

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INDEX

Agriculture	1-7, 1-24, 2-1, 3-4, 4-1, 4-3
Air Quality	2-1, 3-1
Ashley National Forest	1-26, 2-15, 3-20
Baxter Pass Alternative	1-37, 3-10, 3-15, 3-20, 3-21, 4-4, 4-5
Brown's Park	2-11, 3-10, 3-15, 3-20, 4-3, 4-4
Climate	2-1, 3-1
Colorado	1-1, 1-3, 1-24, 1-36, 1-37, 2-3, 2-9, 2-10, 3-10, 3-13, 3-14, 4-1, 4-3, 4-4
Cultural Resources	1-2, 1-3, 1-7, 1-26, 1-36, 2-1, 2-3, 2-9, 2-10, 2-21, 3-4, 3-5, 3-8, 3-9, 3-15, 3-17, 4-3, 4-4
Delay of Project Alternative	1-30, 1-32, 1-37, 3-21, 4-4
Douglas Pass Alternative	1-37, 2-21, 3-17, 3-20, 3-21, 4-4, 4-5
East of Dinosaur Alternative	1-32, 1-36
East of Little Mountain Alternative	1-37, 3-21
Energy Use	3-5, 3-14, 3-15, 3-17, 3-20, 3-21
Flaming Gorge National Recreation Area	1-26, 1-27, 1-36, 2-15, 3-10, 3-20, 4-3, 4-4, 4-5
Forests	1-27, 2-1
Geologic Hazards	1-27, 2-1, 3-3, 4-4
Green River	1-2, 1-7, 1-18, 1-36, 2-10, 2-15, 2-21, 3-10, 3-13, 3-15, 3-20, 4-3, 4-4, 4-5
Jesse Ewing Canyon	1-27, 1-36, 1-37, 3-10, 3-15, 3-20, 4-5
Kane Springs	1-42, 3-11, 3-15, 3-17
Land Use Controls and Constraints	2-1, 2-15, 2-21, 3-4, 3-5, 3-13
Little Mountain Alternative	1-37, 2-21, 3-20, 3-21
Livestock Grazing	2-1, 3-4, 4-3
Mineral Resources	1-36, 2-1, 4-3, 4-5
Moab Canyon	1-27, 1-42, 2-20, 3-10, 3-13, 3-15, 3-17, 4-3, 4-4, 4-5

New Mexico 1-1, 1-3, 1-24, 2-3, 2-10, 2-20, 3-13, 3-14, 4-1, 4-3, 4-4

No Action Alternative 1-30, 1-32, 1-37, 3-20, 3-21

Noise 2-1, 3-4

100-year Floodplains 1-7, 2-1, 3-5, 3-8

Paleontology 1-36, 1-42, 2-1, 2-21, 3-3, 3-5, 3-15, 3-17, 3-20, 4-3, 4-4

Pine Mountain Alternative 1-37, 2-21, 3-20, 3-21

Pipeline Ruptures (including spills) . . 1-28, 1-29, 1-30, 3-3, 4-3, 4-4

Prime and Unique Farmlands 1-7, 2-1, 2-15, 2-21, 3-4, 3-5, 3-13, 3-20

Recreation 1-24, 2-1, 3-4, 3-9

Red Creek Badlands 1-27, 1-36, 4-3, 4-4

San Juan National Forest 1-26, 1-27, 3-10, 3-15

Social and Economic Conditions . . . 2-1, 2-20, 3-4, 3-5, 3-13, 3-17, 3-21

Soils 1-20, 1-22, 1-27, 1-30, 1-36, 1-42, 2-1, 3-3, 4-3, 4-4

Texas 1-1, 1-3, 1-32, 2-3, 2-9

Threatened or Endangered Species. . . 1-2, 1-7, 1-36, 2-1, 2-3, 3-3, 3-5, 3-8, 4-4, 4-5

Transportation Networks 1-10, 1-20, 2-1, 3-4, 4-3, 4-4

Utah 1-1, 1-3, 1-24, 1-27, 1-32, 1-36, 1-37, 1-42, 2-3, 2-9, 2-10, 2-11, 2-20 3-10, 3-13, 3-14, 4-3, 4-4, 4-5

Vegetation 1-22, 1-27, 1-30, 1-36, 1-42, 2-1, 3-3, 3-8, 3-9, 3-20

Visual Resources. 1-24, 1-26, 1-36, 1-42, 2-1, 2-15, 2-21,3-4, 3-5, 3-9, 3-15, 3-17, 3-20, 4-4

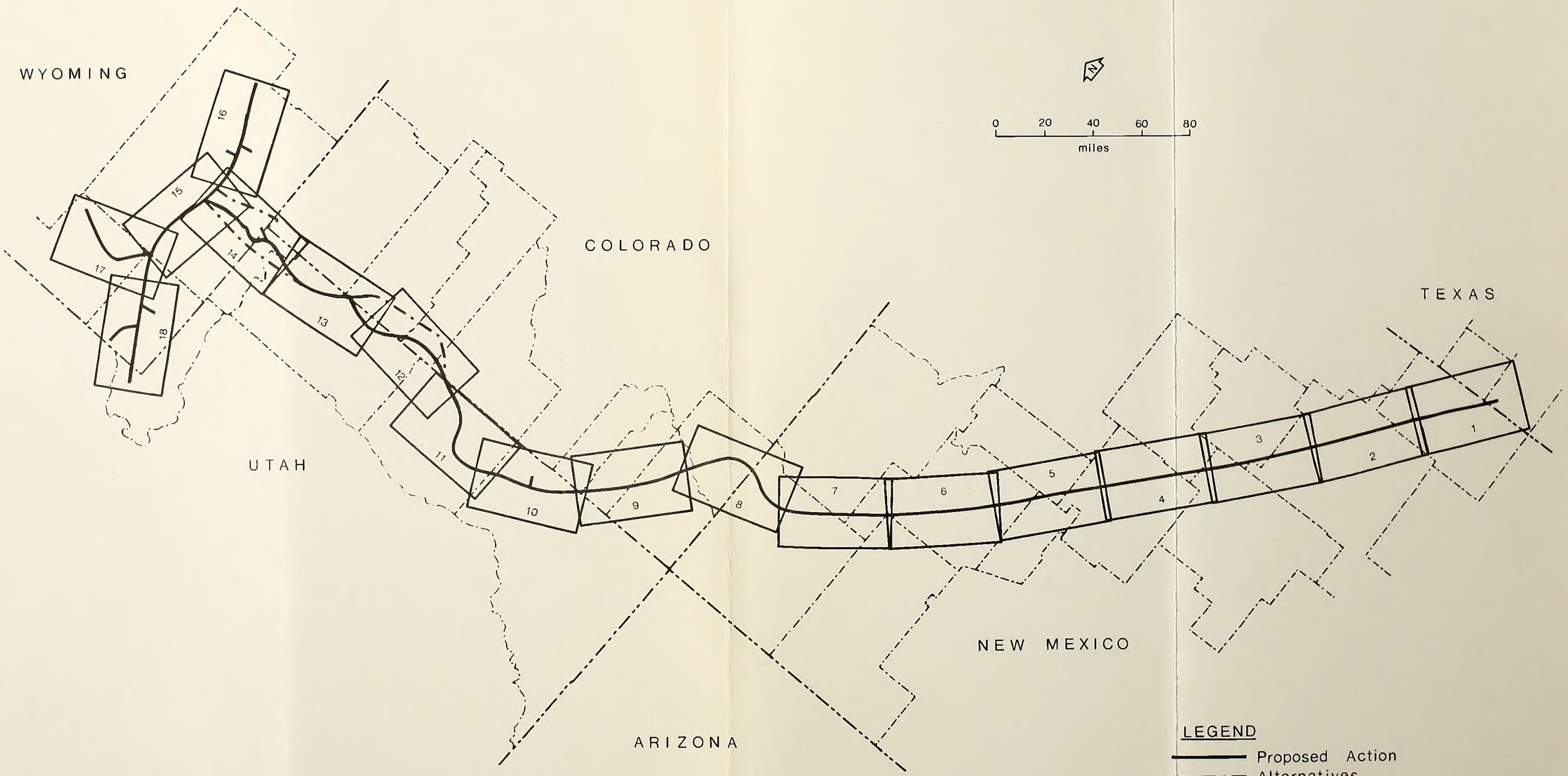
Water Resources. 1-24, 2-1, 4-1, 4-3

Wilderness Resources 1-7, 1-26, 2-1, 2-15, 3-3, 3-4, 3-5, 3-8, 3-11, 4-1

Wild Horses 1-36, 3-4

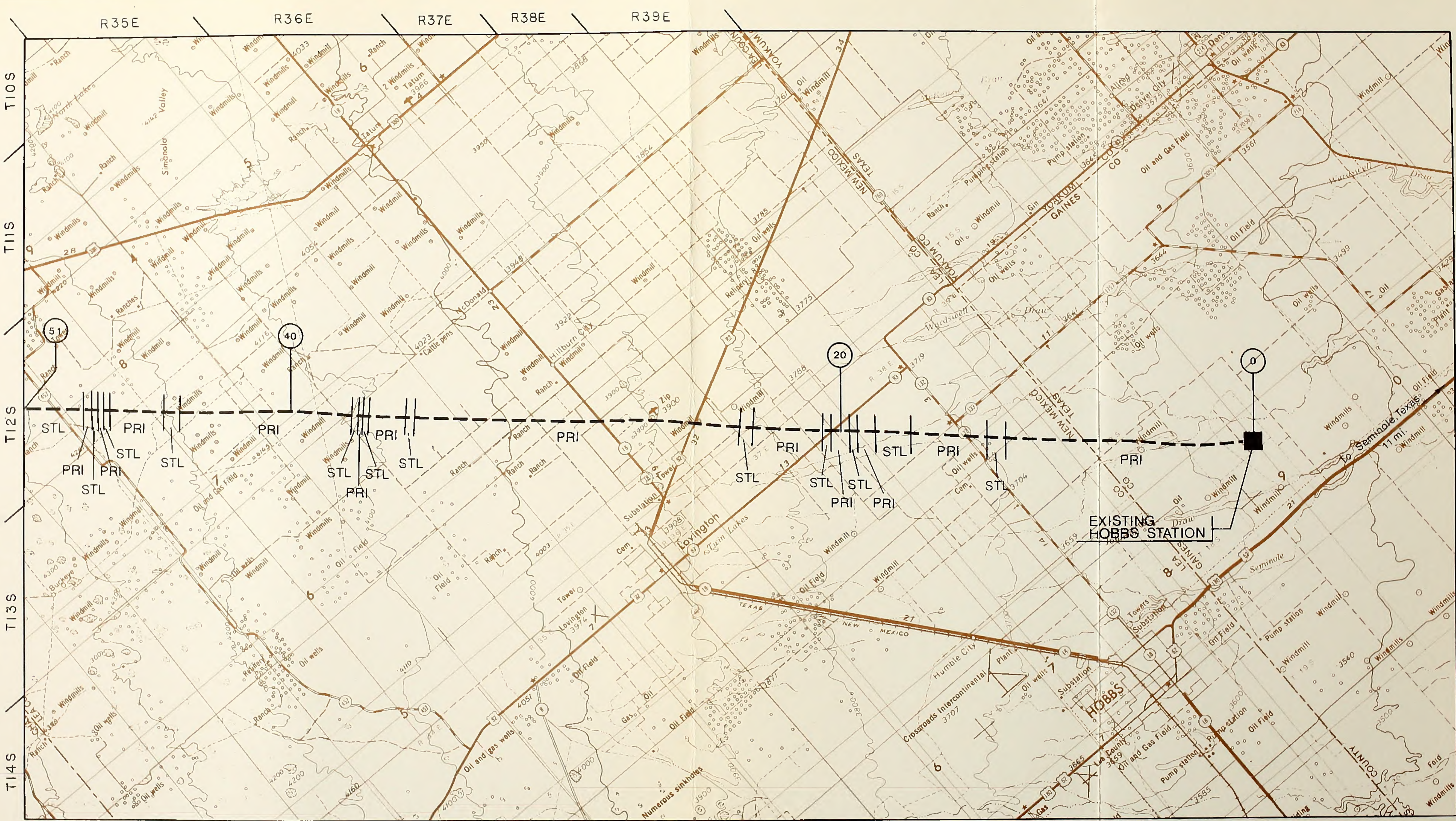
Wildlife 1-7, 1-24, 1-37, 1-42, 2-1, 3-3, 3-5, 3-8, 4-3, 4-4, 4-5

Wyoming 1-1, 1-3, 1-24, 1-27, 1-37, 2-3, 2-9, 2-10, 2-11, 2-20, 3-13, 3-14, 3-20, 4-3, 4-4, 4-5



APPENDIX "A"

Figure 1. Index Maps 1 - 18 of Mapco Proposed Action And Alternatives For Rocky Mountain Liquid Hydrocarbons Pipeline.



Note: ( ) Tracts less than 40 acres are usually omitted because of the map scale

LEGEND

Status of Proposed ROW:

- —·—·— Alternative Route
- — — — Existing Mapco ROW
- ········· Near Existing Road, Railroad, Pipeline or Other Utility
- ——— Not Near Existing Utility ROW

BLM.....Public Land
STL.......State Land
PRI.......Private Land
FS.........Forest Service Land
Tribal Name......Indian Reservation or Indian Trust Land

(1) Milepost
■ Pump Station
◩ Pump Station Alternative
Boundary of Ownership

— P — Power
— C — Communications

0 2 4 6
miles

Map 1 of 18

R27E R28E R29E R30E R31E R32E R33E

T4S T5S T6S T7S T11S T12S T13S T14S

PROPOSED WHITE LAKES STATION

Note: (1) Tracts less than 40 acres are usually omitted because of the map scale

LEGEND

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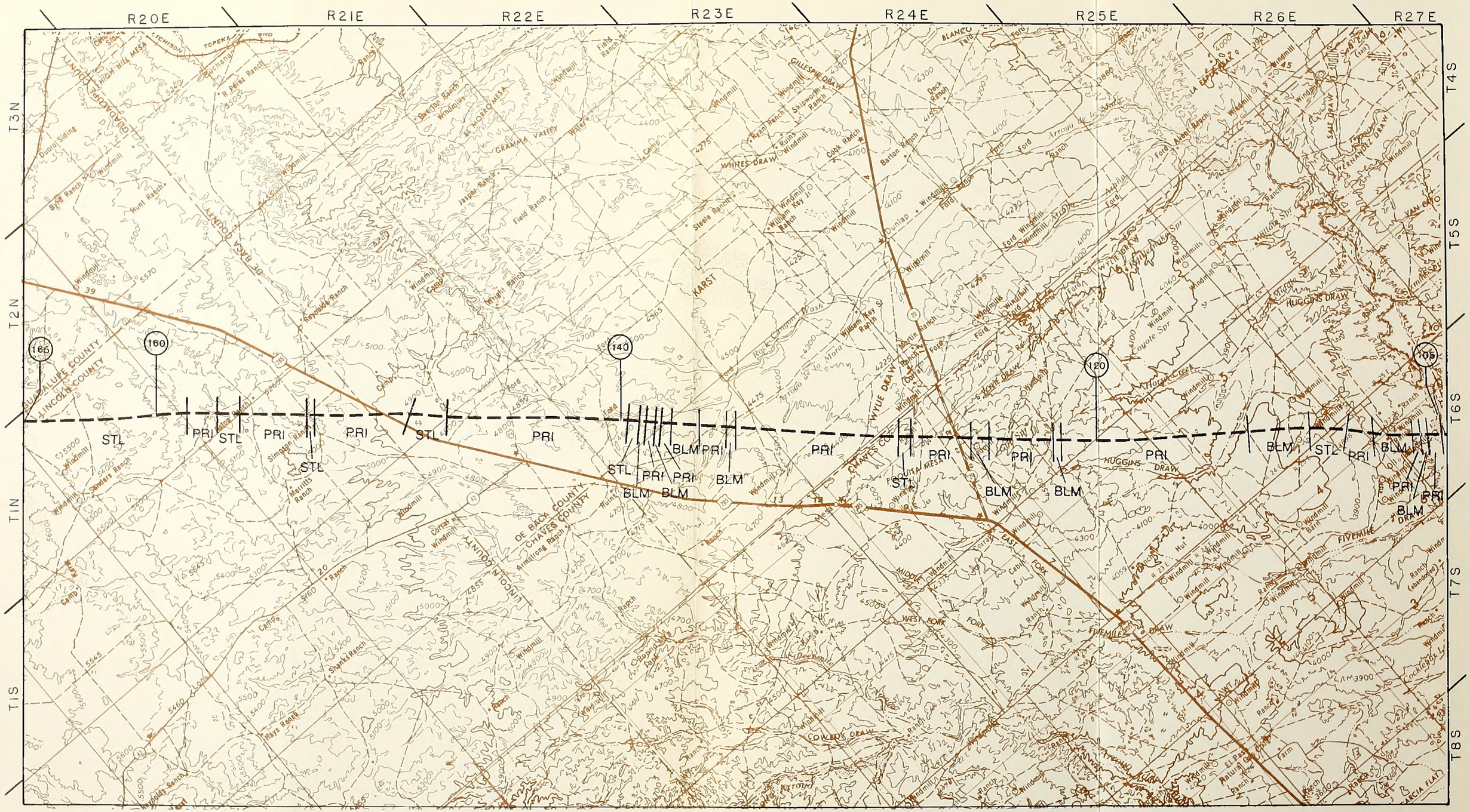
(1) Milepost
Pump Station
Pump Station Alternative
Boundary of Ownership

P — Power
C — Communications

0 2 4 6 miles



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(1) Milepost

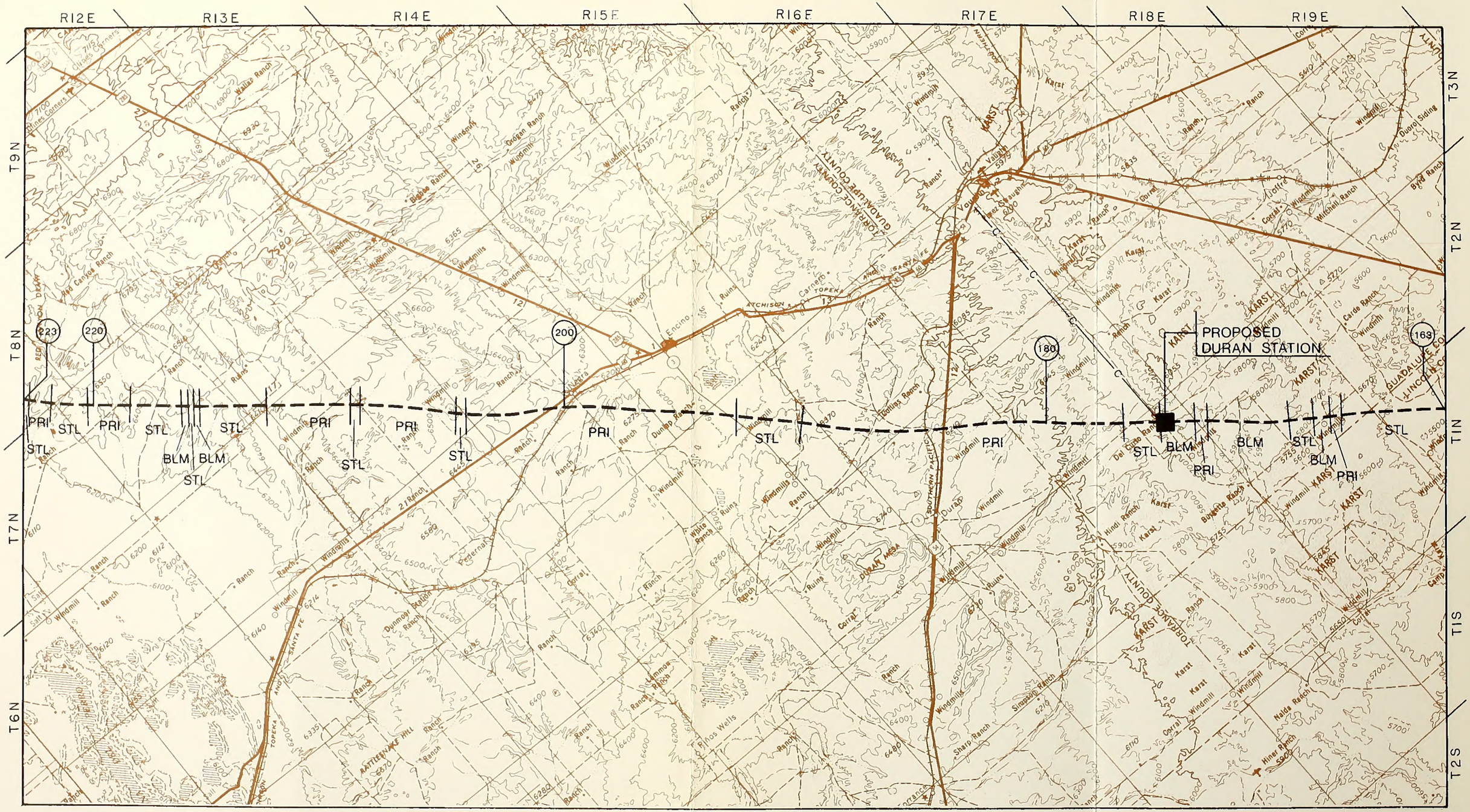
Pump Station

Pump Station Alternative

Boundary of Ownership

P — Power
C — Communications

0 2 4 6 miles



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(1) Milepost

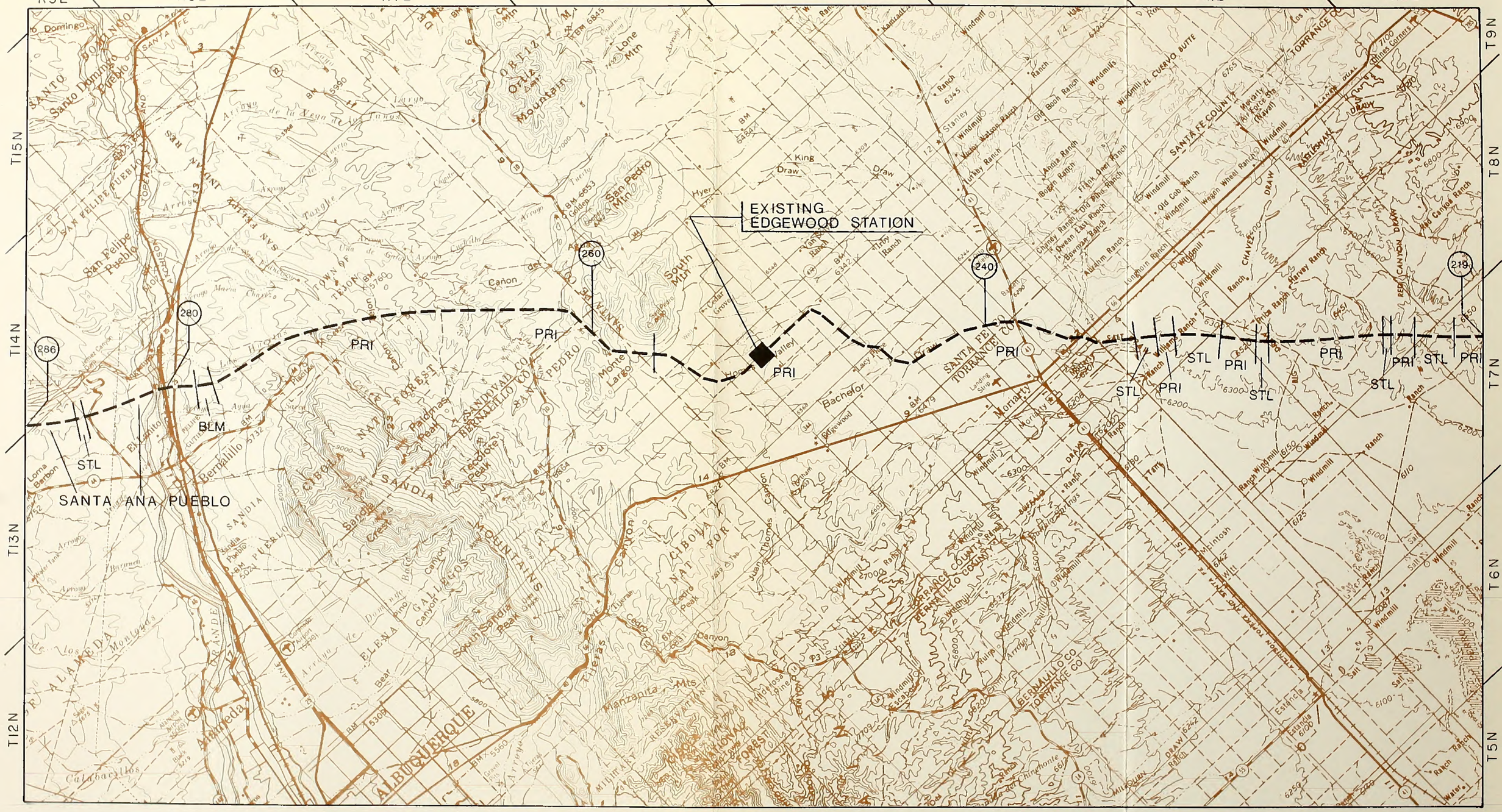
Pump Station

Pump Station Alternative

Boundary of Ownership

— P — Power
— C — Communications

0 2 4 6 miles



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(1) Milepost

Pump Station

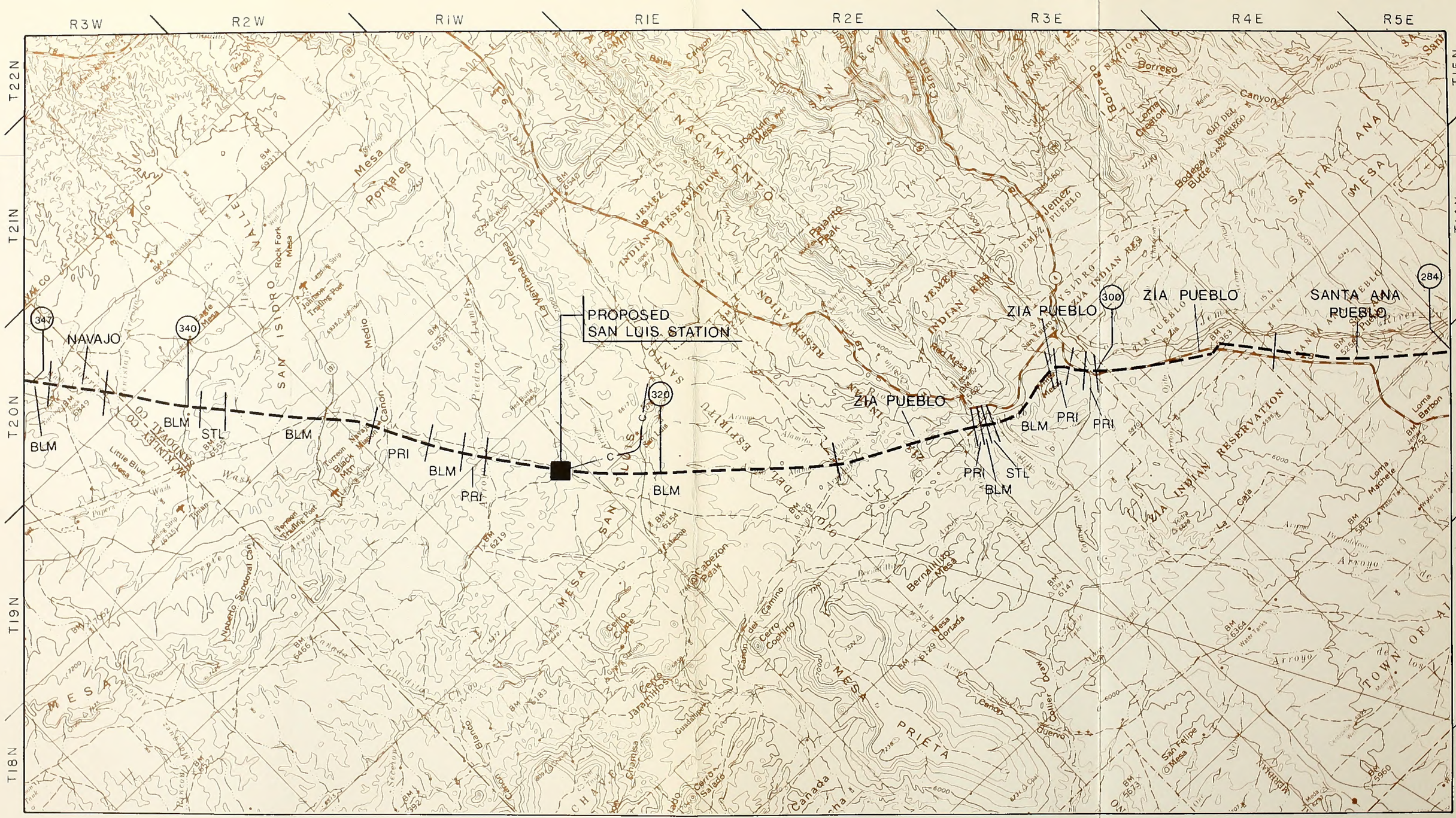
Pump Station Alternative

Boundary of Ownership

— P — Power
— C — Communications

0 2 4 6 miles

Note: 1) Tracts less than 40 acres are usually omitted because of the map scale



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(1) Milepost
Pump Station
Pump Station Alternative
Boundary of Ownership

P — Power
C — Communications

0 2 4 6 miles

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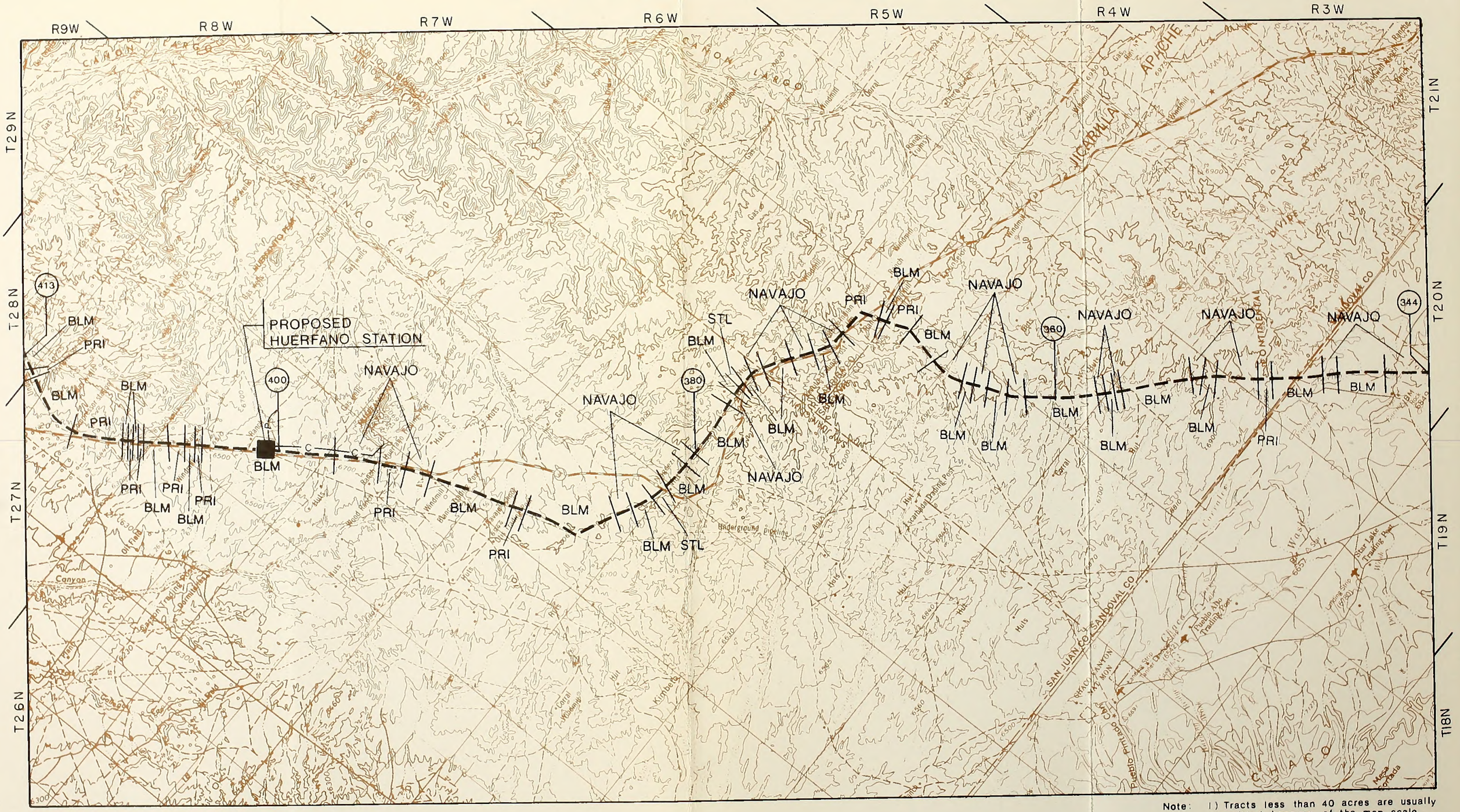

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(1) Milepost

Pump Station

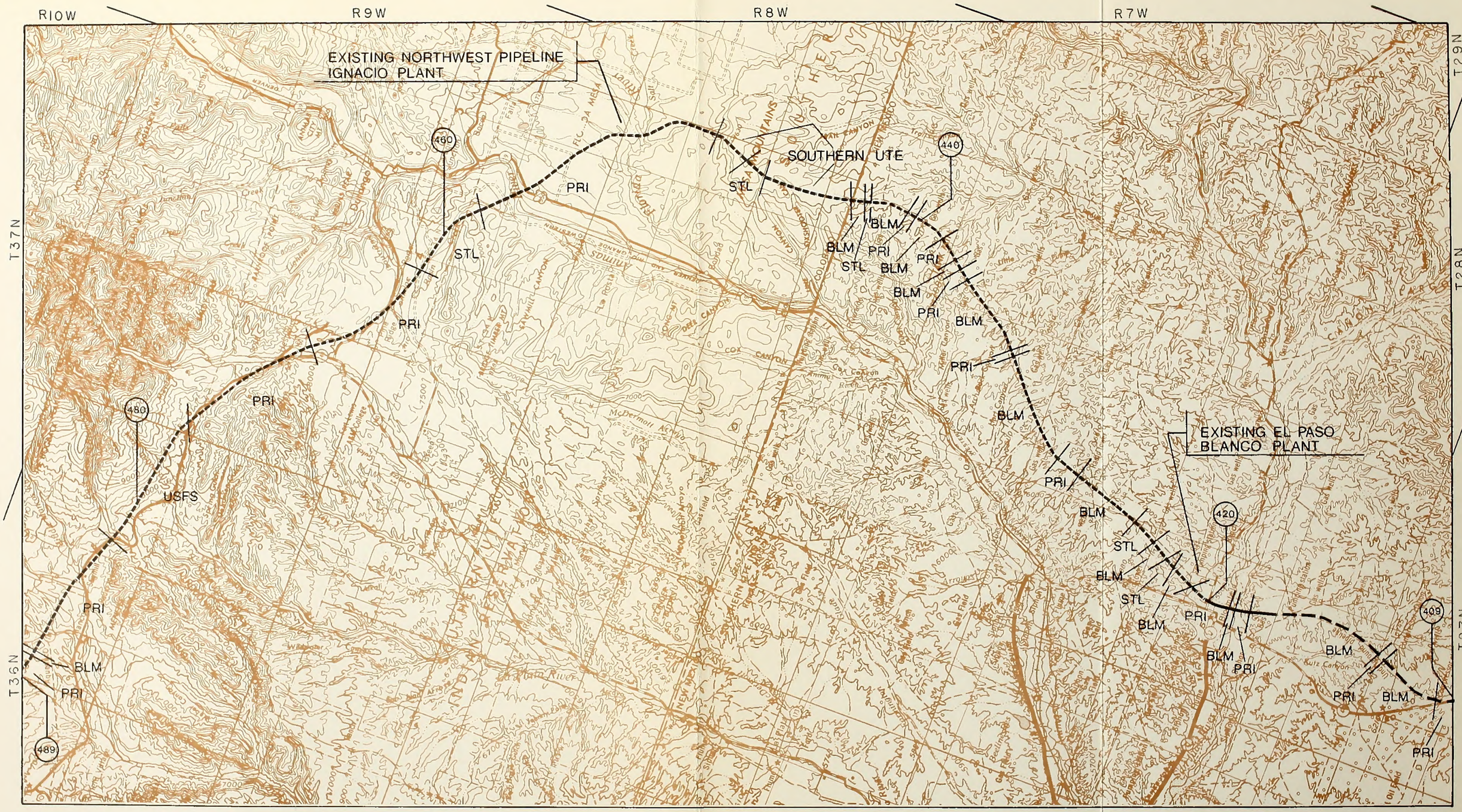
Pump Station Alternative

Boundary of Ownership

P — Power
C — Communications

N

0 2 4 6
miles



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(1) Milepost
Pump Station
Pump Station Alternative
Boundary of Ownership

— P — Power
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0 2 4 6 miles

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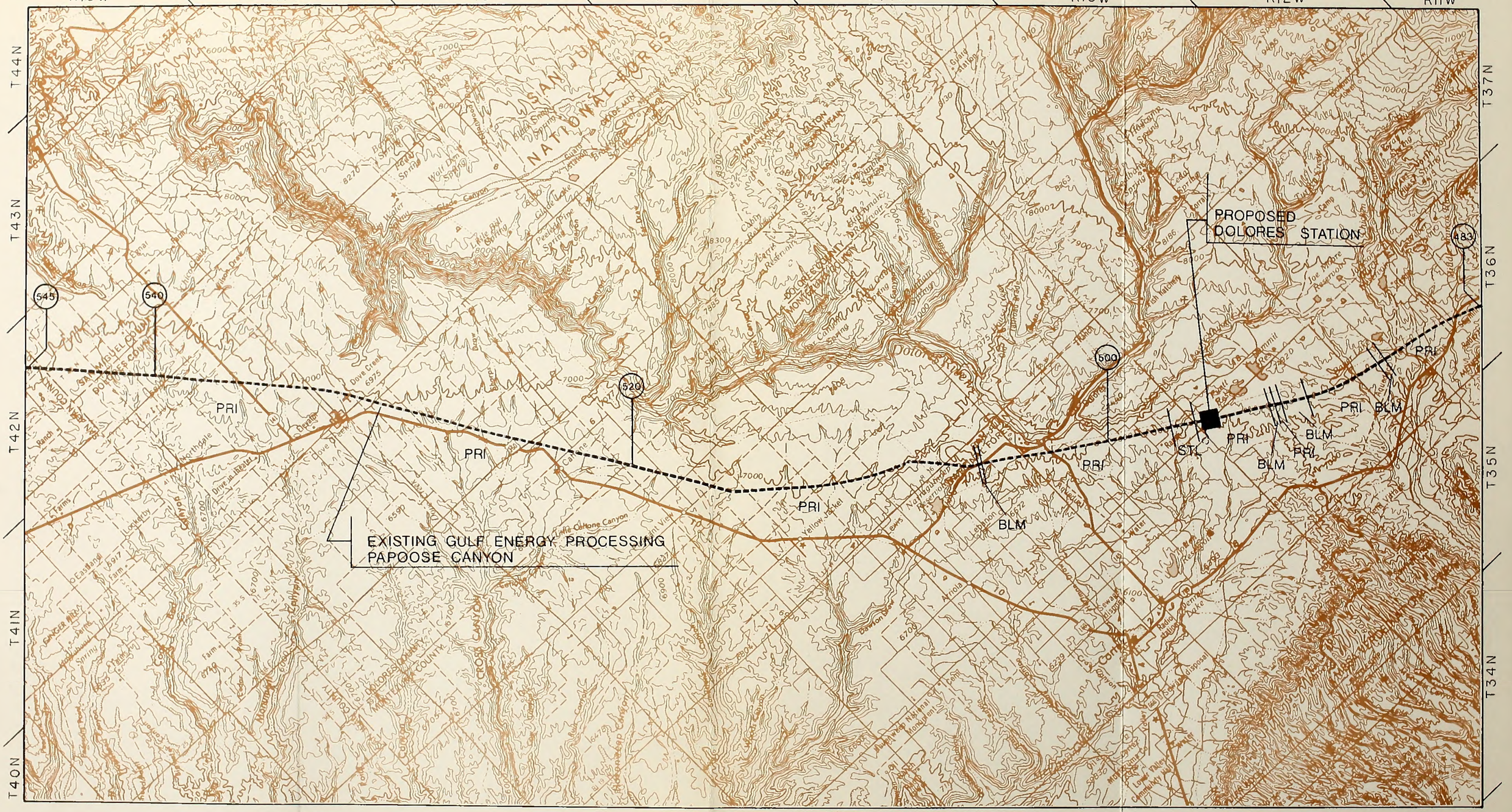

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(1) Milepost

Pump Station

Pump Station Alternative

Boundary of Ownership

— P — Power
— C — Communications

0 2 4 6 miles

R24E R25E R26E R20W R19W R18W R17W

T24S T25S T26S T43N T42N T41N

EXISTING UNION-LISBON PLANT

PROPOSED LISBON STATION

LEGEND

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(1) Milepost

Pump Station

Pump Station Alternative

Boundary of Ownership

— P — Power
— C — Communications

0 2 4 6 miles

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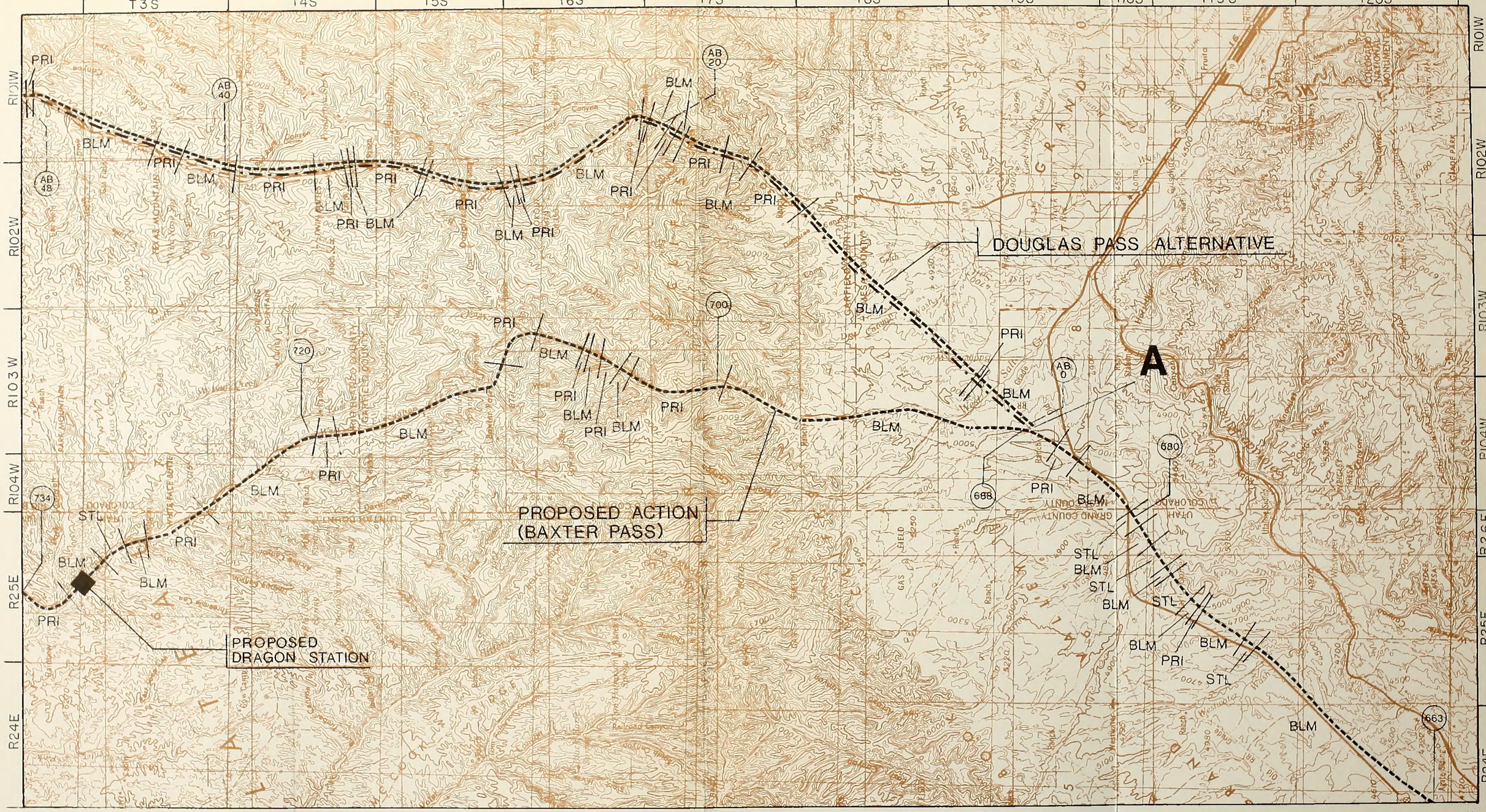

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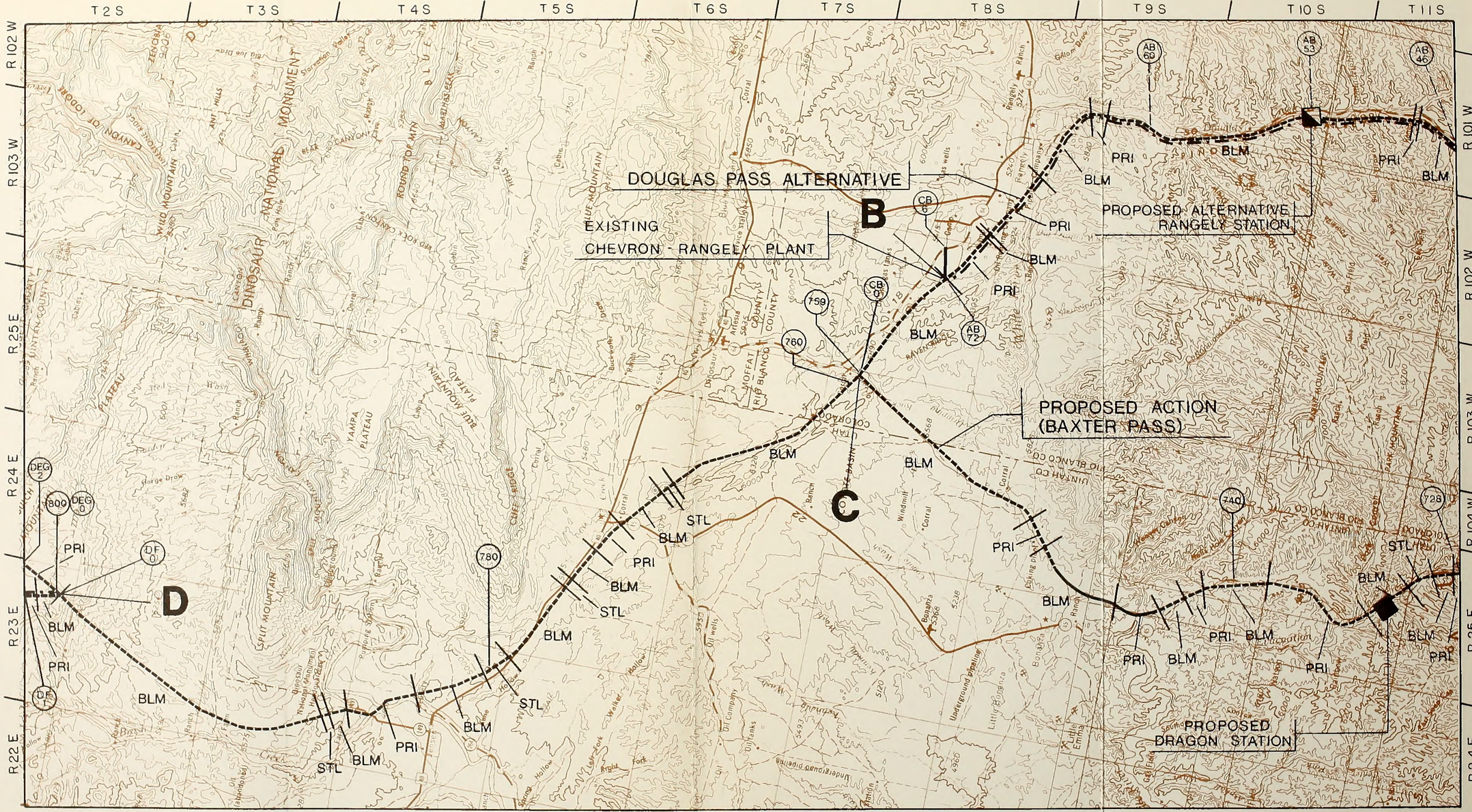
(1) Milepost
Pump Station
Pump Station Alternative
Boundary of Ownership

— P — Power
— C — Communications

N

0 2 4 6
miles



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(1) Milepost

Pump Station

Pump Station Alternative

Boundary of Ownership

P — Power
C — Communications

N

0 2 4 6
miles

T17N T16N T15N T14N T13N T12N T3N T2N TIN TIS T2S

R103W R104W R105W R106W R107W R102W R103W R104W R25E R24E R23E

PROPOSED ALTERNATIVE ROCK SPRINGS STATION SOUTH BAXTER

PROPOSED ACTION (EAST OF LITTLE MOUNTAIN)

PINE MOUNTAIN ALTERNATIVE

PROPOSED ROCK SPRINGS STATION HWY 373

LITTLE MOUNTAIN ALTERNATIVE

G F E D

BLM PRI STL USFS

LEGEND

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Pump Station
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Boundary of Ownership

P — Power
C — Communications

0 2 4 6 miles

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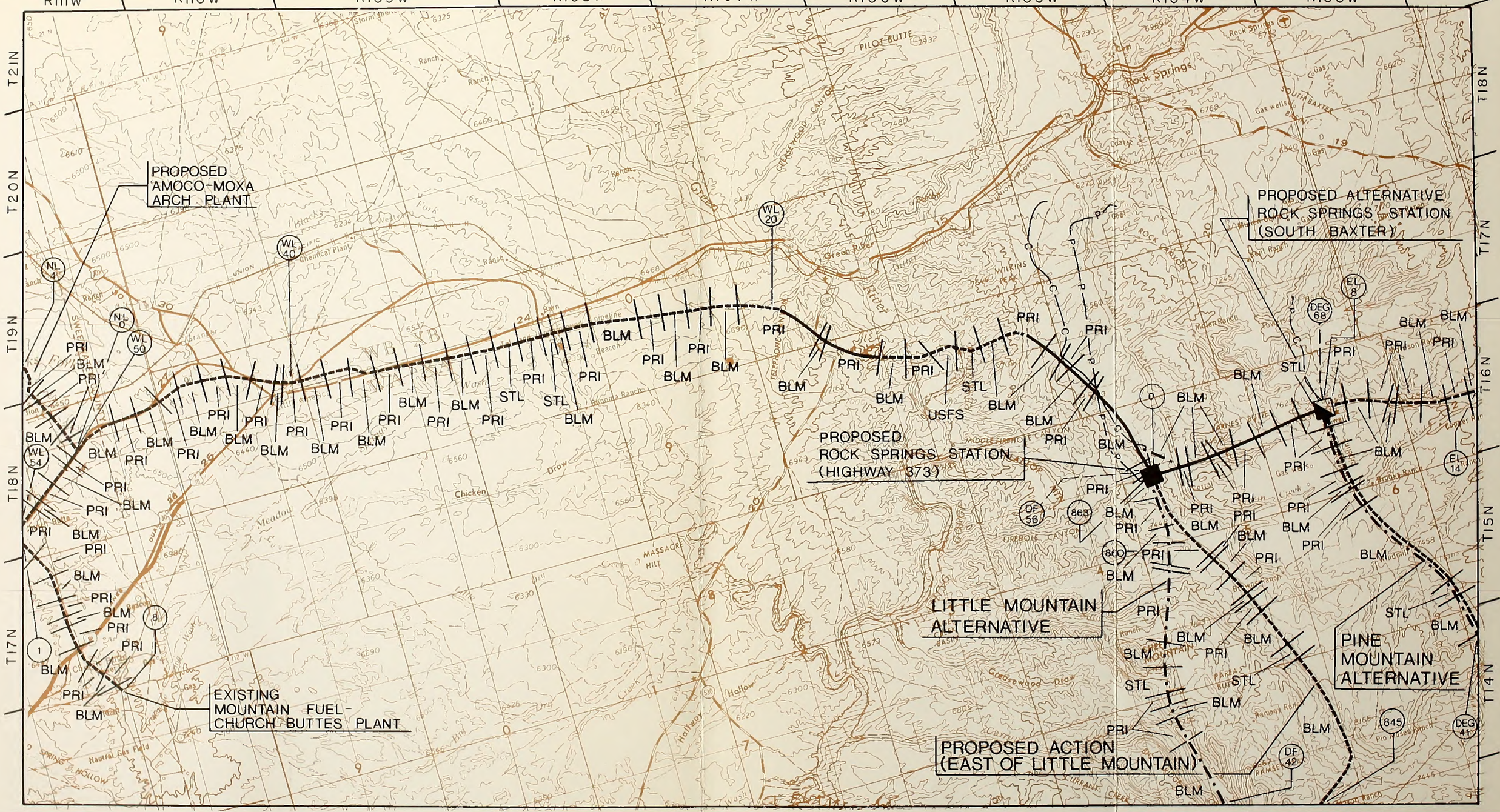

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Pump Station
Pump Station Alternative
Boundary of Ownership

— P — Power
— C — Communications

N

0 2 4 6 miles

R103W R102W R101W R100W R99W R98W R97W R96W R95W R94W

T18N T17N T16N T15N T14N T22N T21N T20N T19N T18N

EXISTING GAS PRODUCING PROPERTIES PATRICK DRAW PLANT

EXISTING CHAMPLIN PATRICK DRAW PLANT

EXISTING CHAMPLIN - BRADY PLANT

EXISTING TEXACO TABLE ROCK PLANT

EXISTING CITIES SERVICE RED DESERT PLANT

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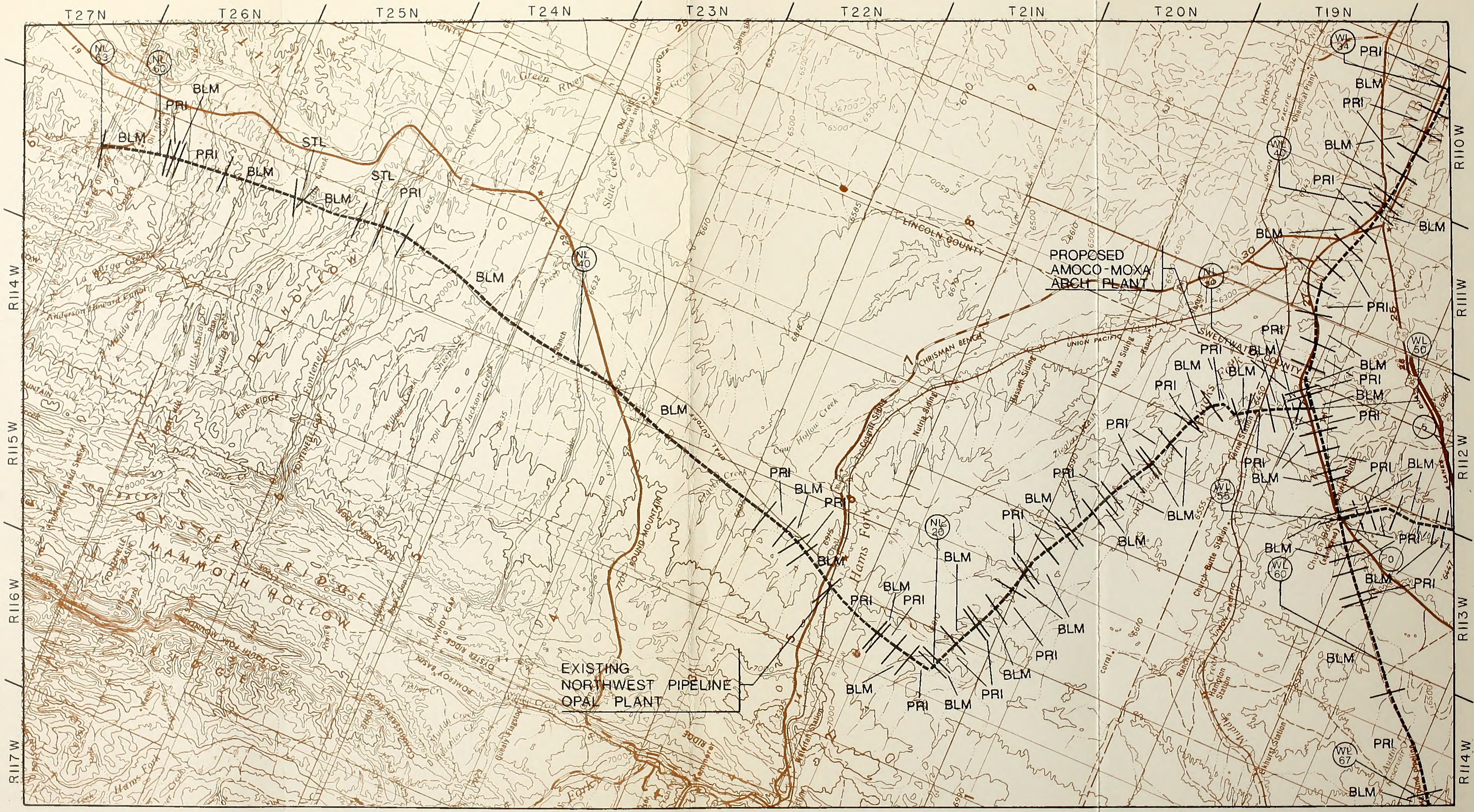
— C — Communications

N

0 2 4 6
miles



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0 2 4 6
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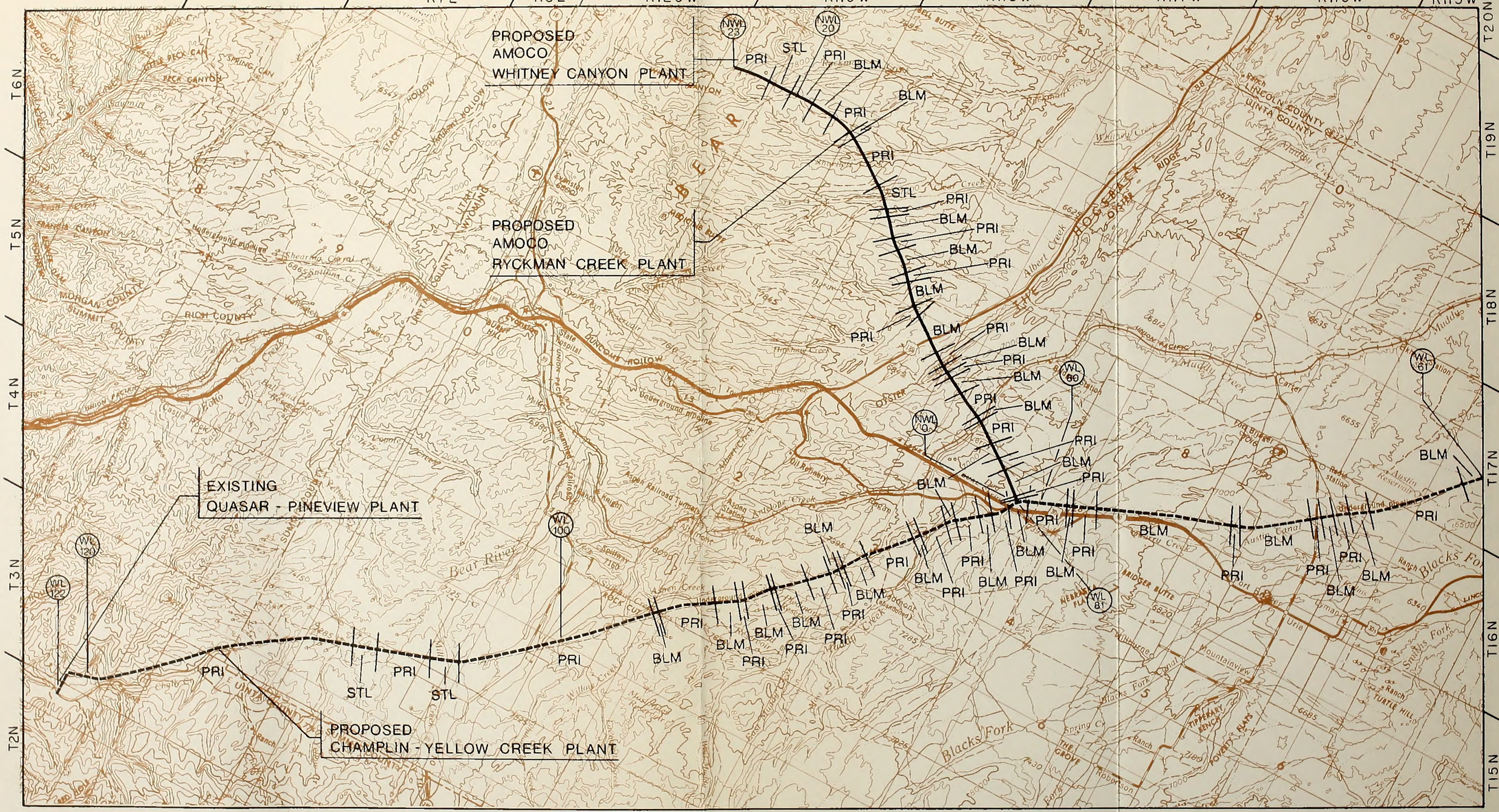

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Pump Station
Pump Station Alternative
Boundary of Ownership

— P — Power
— C — Communications

N
0 2 4 6
miles

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