
**ENVIRONMENTAL ASSESSMENT
FOR
ANADARKO E&P COMPANY L.P.
MONELL CO₂ PIPELINE PROJECT**

EA #WY-040-03-035

Prepared for

**U.S. Department of the Interior
Bureau of Land Management**

Rock Springs Field Office

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Prepared by

Buys and Associates, Inc., an environmental consulting firm, with guidance, participation, and independent evaluation by the Bureau of Land Management (BLM), prepared this environmental assessment. The BLM, in accordance with federal regulation 40 CFR 1506.5(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and the content of this document.

Table of Contents

1.0	<i>INTRODUCTION</i>	1
1.1	HISTORY OF THE PROJECT AREA	2
1.2	PURPOSE AND NEED	2
1.3	AUTHORIZING ACTIONS	4
1.4	PUBLIC INVOLVEMENT	5
2.0	<i>PROPOSED ACTION AND ALTERNATIVES</i>	7
2.1	PROPOSED ACTION	7
2.1.3	Construction Operations	9
2.1.4	Highway, County Road and Railroad Crossings	11
2.1.4.1	Electrical Transmission Line Crossings.....	11
2.1.4.2	Stream and Wetland Crossings	12
2.1.5	Hazardous Materials	13
2.1.6	Testing and Safety	14
2.1.7	Completion Operations.....	15
2.1.8	Pipeline Operation and Maintenance	15
2.1.9	Reclamation.....	15
2.1.10	Abandonment.....	16
2.1.11	Applicant Proposed Environmental Protection Measures.....	16
2.1.11.2	Domestic Livestock and Feral Horses.....	17
2.1.11.3	Vegetation Resources.....	17
2.1.11.4	Noxious and Invasive Weeds	17
2.1.11.5	Wildlife Resources	18
2.1.11.6	Soils.....	19
2.1.11.7	Surface and Groundwater Resources	20
2.1.11.8	Paleontological Resources	21
2.1.11.9	Cultural Resources	21
2.1.11.10	Public Health and Safety	22
2.1.11.11	Air Quality.....	22
2.2	NO ACTION ALTERNATIVE	22
2.3	ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS	23
3.0	<i>AFFECTED ENVIRONMENT</i>	25
3.1	SURFACE OWNERSHIP AND EXISTING LAND USES	26
3.2	GEOLOGY / MINERALS / PALEONTOLOGY / FLOODPLAINS	27
3.2.1	Geology	27
3.2.2	Minerals.....	27
3.2.3	Paleontology	27
3.2.4	Floodplains	27
3.3	CULTURAL RESOURCES	27
3.4	SOIL RESOURCES	29
3.5	WATERSHED RESOURCES AND WETLANDS	30
3.6	VEGETATION RESOURCES	31
3.6.1	General Vegetation	31

3.6.2	Special Status Plant Species	31
3.6.3	Noxious and Invasive Weeds.....	33
3.7	WILDLIFE RESOURCES.....	33
3.7.1	General Wildlife	34
3.7.2	Big Game	34
3.7.3	Feral Horses.....	35
3.7.4	Upland Game Birds	35
3.7.5	Raptors.....	35
3.7.6	Special Status Wildlife Species	36
4.0	ENVIRONMENTAL CONSEQUENCES	43
4.1	CULTURAL RESOURCES.....	43
4.1.1	Proposed Action	43
4.1.2	No Action	43
4.1.3	Mitigation / Monitoring	43
4.2	SOILS.....	44
4.2.1	Proposed Action	44
4.2.2	No Action	45
4.2.3	Mitigation / Monitoring	45
4.3	SURFACE WATER AND WETLANDS	46
4.3.1	Proposed Action	46
4.3.2	No Action Alternative.....	47
4.3.3	Mitigation / Monitoring	47
4.4	VEGETATION RESOURCES	47
4.4.1	Proposed Action	47
4.4.1.1	General Vegetation.....	47
4.4.1.2	Special Status Plant Species	48
4.4.1.3	Noxious and Invasive Weeds	48
4.4.2	No Action	48
4.4.2.1	General Vegetation.....	48
4.4.2.2	Special Status Plant Species	48
4.4.3	Mitigation / Monitoring	48
4.5	WILDLIFE RESOURCES.....	49
4.5.1	Proposed Action	49
4.5.1.1	General Wildlife.....	49
4.5.1.2	Big Game	49
4.5.1.3	Feral Horses	50
4.5.1.4	Raptors	50
4.5.1.5	Special Status Wildlife Species.....	51
4.5.2	No Action	53
4.5.2.1	General Wildlife.....	53
4.5.2.2	Big Game	53
4.5.2.3	Feral Horses	53
4.5.2.4	Raptors	53
4.5.2.5	Special Status Wildlife Species.....	54
4.5.3	Mitigation / Monitoring	54
4.6	UNAVOIDABLE ADVERSE IMPACTS	55
4.6.1	Proposed Action	55
4.6.2	No Action	55
4.7	RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY.....	55

4.8	IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES .	55
4.8.1	Proposed Action	56
4.8.2	No Action Alternative.....	56
5.0	<i>REASONABLY FORSEEABLE DEVELOPMENT AND CUMULATIVE IMPACTS</i>	57
575.1	INTRODUCTION	57
5.2	REASONABLY FORESEEABLE DEVELOPMENT	58
5.3	CUMULATIVE IMPACTS	58
5.3.1	Proposed Action	58
5.3.1.1	Soils and Vegetation	58
5.3.1.2	Wildlife Resources	59
5.3.2	No Action	59
6.0	<i>LIST OF PREPARERS AND REVIEWERS, AND</i>	61
	<i>CONSULTATION AND COORDINATION</i>	61
7.0	<i>PUBLIC INTEREST</i>	63
8.0	<i>REFERENCES CITED</i>	65
	<i>APPENDIX A</i>	69
	<i>APPENDIX B</i>	77

LIST OF ACRONYMS

AO	Authorized Officer
API	American Petroleum Institute
AQD	Air Quality Department
AUM	Animal Unit Month
ASME	American Society of Mechanical Engineers
BMP	Best Management Practice
BLM	Bureau of Land Management
CIAA	Cumulative Impact Assessment Area
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
CD/WII EIS	Continental Divide Wamsutter II Environmental Impact Statement
DPS	Distinct Population Segment
DOT	Department of Transportation
EA	Environmental Assessment
EOR	Enhanced Oil Recovery
ESA	Endangered Species Act of 1973
FAR	Functioning At Risk
HP	Horsepower
ID	Interdisciplinary
MAOP	Maximum Allowable Operating Pressure
NEPA	National Environmental Policy Act
NO _x	Oxides of Nitrogen
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWF-NWI	National Wildlife Federation - National Wetland Inventory
OHV	Off-Highway Vehicle
PEMA	Palustrine, Emergent, Temporarily Flooded
PEMC	Palustrine, Emergent, Seasonally Flooded
PFC	Proper Functioning Condition
PUSC	Palustrine, Unconsolidated Shore, Seasonally Flooded
PUSA	Palustrine, Unconsolidated Shore, Temporarily Flooded
RFD	Reasonably Foreseeable Development
RMP	Resource Management Plan
ROW	Right of Way
RSGA	Rock Springs Grazing Association
SHPO	State Historical Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
UPC	Union Pacific Corporation
USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management
WDEQ	Wyoming Department of Environmental Quality
WGFD	Wyoming Game and Fish Department
WYDOT	Wyoming Department of Transportation
WYNDD	Wyoming Natural Diversity Database

1.0 INTRODUCTION

Anadarko E&P Company LP (formerly known as RME Petroleum Company), a subsidiary of Anadarko Petroleum Corporation, is proposing to construct, own, and operate a buried carbon dioxide (CO₂) gas pipeline and related facilities. The Bureau of Land Management (BLM) case numbers assigned to Anadarko's project include WYW-156096 for the pipeline and facilities and WYW-156817 for the access roads.

The proposed pipeline would be used to transport CO₂ gas from an existing valve terminal that is part of the Exxon/Mobil Shute Creek CO₂ Distribution Pipeline System to the existing Monell Federal Unit Oil Field (Monell Field). The Monell Field is operated by Anadarko E&P Company LP (Anadarko) and was formed 1964. As general background, when an oil field is first discovered, it is typically brought into production using primary production methods where the natural pressure of the reservoir or pumping is used to bring oil to the surface. As the oil is produced, natural reservoir pressure declines over time, and there is a decrease in oil production from the field. Typically, primary production results in recovery of approximately 15 percent of the original-oil-in-place (BLM 1989). The most common type of secondary recovery used in Wyoming is waterflooding. Water is relatively inexpensive to obtain and inject, and works well in displacing additional oils from the reservoir and increasing reservoir pressure. Water pressure was first applied a hundred years ago but gained widespread use in the 1950's. Waterflooding can result in an incremental increase of up to approximately 25 percent recovery, raising the total recovery (primary plus secondary) to approximately 40 percent of the original-oil-in-place. Even so, at the completion of secondary recovery, approximately 60 percent of the original oil still remains underground.

Anadarko's proposal is designed to liberate some of the remaining oil resources from the existing Monell Field. Enhanced tertiary recovery techniques are currently being used throughout the United States. Johnson (Johnson, T., U.S. Army Corp of Engineers, pers. comm. with K. Chaddis-Burrell, ENSR, April 2000) estimated that available enhanced-oil-recovery (EOR) techniques could result in the addition of 18 to 53 billion barrels of oil to domestic reserves nationwide. Of these tertiary recovery methods, CO₂ flooding shows the widest applicability and would likely result in the largest volume of tertiary oil recovery. Thus, this type of project is important to the nation's ongoing efforts to provide for national security and supply the burgeoning national need for secure domestic energy. President Bush has requested that federal agencies expedite exploration and development of energy supplies from the public lands without comprising environmental quality.

As proposed, this project may result in several environmental benefits. For example, though CO₂ is considered to be a common, ordinary compound usually in a gaseous state, increased CO₂ concentrations in the atmosphere are

theorized to be a contributor to the greenhouse effect and global warming. Anadarko's proposal would transport large quantities of CO₂, currently being vented to the atmosphere from an existing facility to the Monell Field and sequester it underground to stimulate additional oil production. Specifically, Anadarko's proposal includes the construction of 32.7 miles of 8-inch diameter and 6-inch diameter pipeline. In addition to the pipeline, Anadarko proposes to install three valve stations, seven temporary work areas, one meter station and one booster pump station along the pipeline corridor. Anadarko would also upgrade 1.4 miles (7,400 feet) of existing roads.

The proposed Monell CO₂ pipeline would begin at the existing Exxon/Mobil connection in the SWNW1/4 of Section 15, T23N, R100W, 6th PM, Sweetwater County, Wyoming. The pipeline would parallel the existing Duke Energy Field Services' Bravo Interconnect pipeline for the first 14.6 miles to a point in the NWSW1/4 of Section 11, T21N, R99W. The remaining 18.1 miles of new pipeline construction would begin at this point and proceed south into the Monell Field at the Monell #90 well in the center of the NESE1/4 of Section 11, T18N, R99W. Figure 1-1 illustrates the location of the project area and the pipeline route.

1.1 HISTORY OF THE PROJECT AREA

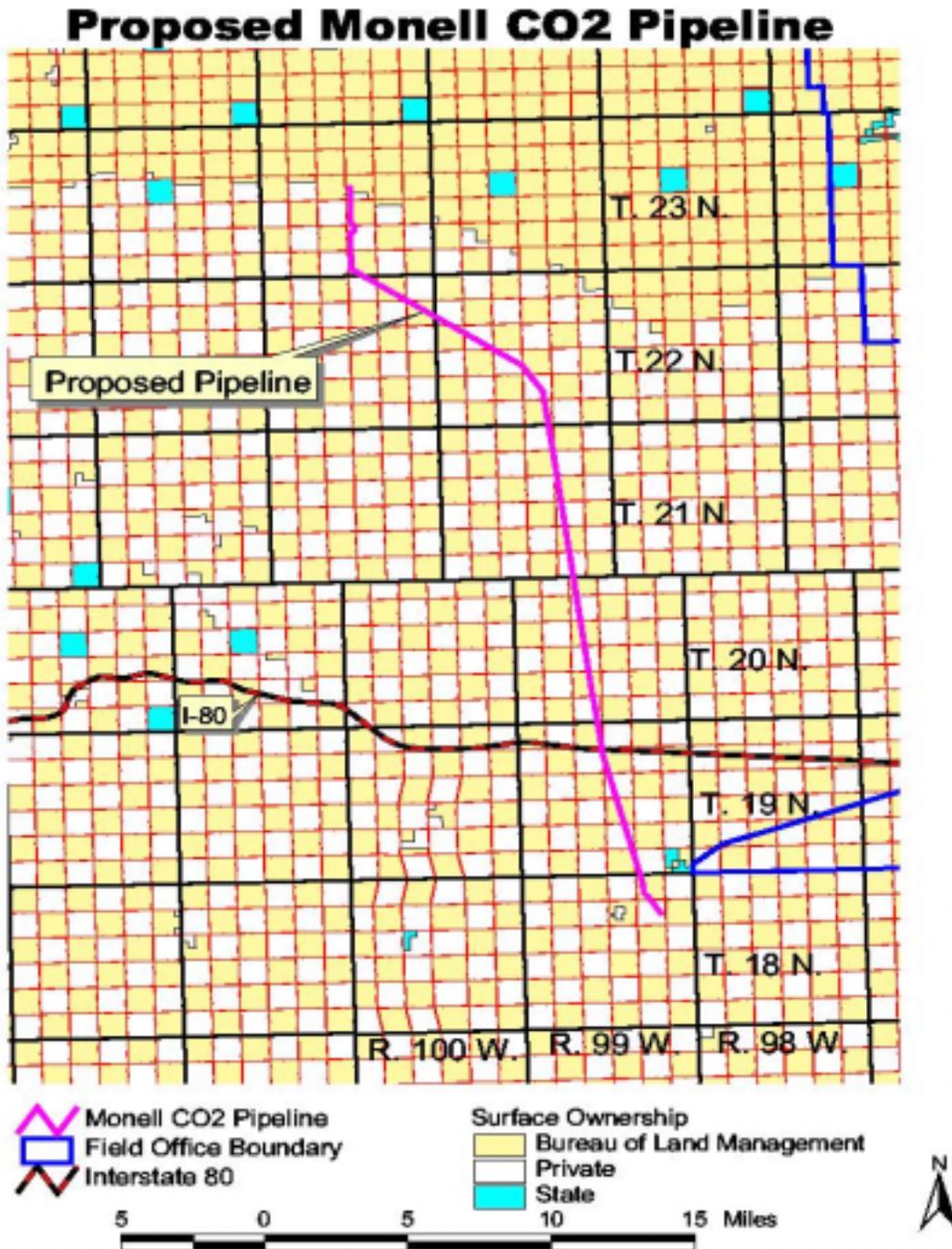
The project area and surrounding region has a history of oil and gas activity. The pipeline would pass through the Monell and Arch oil and gas fields. Infrastructure in the project area consists of access roads, pipelines, storage tanks, producing oil and gas wells, and other surface facilities. Approximately 38% of the proposed pipeline corridor or right-of-way (ROW) is located within the analysis area of the *Continental Divide/Wamsutter II Natural Gas Project Environmental Impact Statement* (CD/WII EIS). The Record of Decision for the CD/WII EIS (BLM 2000) authorizes up to 550 miles of pipeline. This Environmental Assessment (EA) tiers to and incorporates the CD/WII EIS analysis in its entirety. The existing Duke Energy pipeline was analyzed in the *Environmental Assessment for the Bitter Creek Gathering System Pipeline* (EA Number: WY-040-01-092).

The proposed ROW would be constructed on "checkerboard lands." Surface owners include the BLM, Rock Springs Grazing Association, Anadarko Land Corporation, Union Pacific Corporation, and the Wyoming Department of Transportation (WYDOT).

1.2 PURPOSE AND NEED

As described in the Introduction of this EA, the Monell Field has been waterflooded as part of an EOR project. Anadarko also has initiated a pilot CO₂ injection program to evaluate the feasibility of this particular tertiary EOR recovery process. The primary purpose of the proposed pipeline is to transport

Figure 1-1: Monell CO₂ Pipeline Project Area



CO₂ from the existing Exxon/Mobil CO₂ distribution system to the existing Monell Field operated by Anadarko for use in injection wells as part of the ongoing Monell EOR project. The proposed Monell CO₂ pipeline is needed to increase oil recovery by providing CO₂ for miscible injection in the Almond Reservoir. Implementation of EOR projects at existing oil fields results in increased incremental production of oil that would not be recoverable by existing operations. This incremental production extends the economic life of the Monell Field and benefits both state and local economies. This tertiary recovery involves the injection of a fluid into the reservoir to replace the natural pressure lost during primary production.

The development of Federal oil and gas leases by private industry, including transport and delivery of produced oil and gas, is also an integral part of the BLM oil and gas program under authority of the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

1.3 AUTHORIZING ACTIONS

The management of BLM public lands and resources within the project area is directed and guided by the *Green River Record of Decision and Resource Management Plan* (RMP) (BLM 1997a). The RMP allows for processing of ROW grant applications in support of energy production. Impacts associated with a ROW grant (e.g., roads, pipelines, etc.) will be analyzed on a case-by-case basis. Page 9 of the RMP states “the planning area, with the exception of defined exclusion and avoidance areas, will be open to consideration of granting rights-of-way.” The proposed project area is not located in a defined exclusion or avoidance area. This action is also in conformance with the land use decisions pertaining to management of objectives and actions for other historic trails and historic sites (BLM 1997a; pg. 4) and will generally be the same as for designated trails, including a ¼-mile protective setback on either side of the trails. The alternatives are in conformance with the RMP.

The alternatives also would be in compliance within the *Sweetwater County Land Use Plan* (THK Associates, Inc. 1997), the *State of Wyoming Land Use Plan* (Wyoming State Land Use Commission 1979), and the *BLM Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management* (BLM 1997b).

This Environmental Assessment (EA) was prepared for the BLM in accordance with the National Environmental Policy Act (NEPA) of 1969 and in compliance with applicable regulations and laws passed subsequently, including the President’s Council on Environmental Quality regulations, U.S. Department of Interior requirements and guidelines listed in the *BLM Manual Handbook H-1790-*

1. This EA assesses the environmental effects of the Proposed Action and No Action Alternative, and also serves to document public participation and the decision-making process of this proposed action.

Portions of the northern section of the pipeline are located within areas that were analyzed in the CD/WII EIS, approved May 24, 2000 (BLM 2000). This EA tiers to and incorporates the CD/WII analysis in its entirety. The Proposed Action is also in compliance with state and local land use plans, and Federal, state and local laws governing energy related transportation systems.

1.4 PUBLIC INVOLVEMENT

The Council on Environmental Quality (CEQ) regulations require an “early and open process for determining the issues to be addressed and for identifying significant issues related to a Proposed Action” (40 CFR 1501.7). In order to satisfy this CEQ requirement, the BLM selected an Interdisciplinary (ID) Team and “charged” that team to determine the public’s concerns with Anadarko’s proposal. A scoping statement was mailed to 105 parties listed as interested in proposed activities on public lands, and that may be affected by the Proposed Action. A copy of the scoping notice is provided in Appendix A. Eight comment letters were received. A list of commentors, a summary of issues, and when appropriate, a description of where the issue is addressed in the EA is provided in Table 1-1. No issues that could not be avoided/mitigated were identified.

Table 1-1: Public Scoping Comment Summary

Commentor	Summary of Issue	Where Addressed
PacifiCorp	Requests construction standards near their powerlines.	Section 2.1.11.10.
WY Office of Federal Land Policy	Requests consideration of other State Office comments.	Not Addressed
Wyoming Department of Parks & Cultural Res.	No objection to project if EA addresses cultural resources.	Sections 2.1.11.9; 3.3; & 4.1.
WY State Engineers Office	Would like to review EA.	Not Addressed
WY Game & Fish Dept.	Lists several species that have the potential to occur in project area.	Sections 2.1.11.5; 3.7; & 4.5.
WY Office of State Lands	No objections to project.	Not Addressed
Sweetwater Economic Development Assoc.	Support project.	Not Addressed
Petroleum Assoc. Wyoming	Support project.	Not Addressed
U.S. Fish & Wildlife Service	Lists several Threatened, Endangered, or otherwise sensitive species that have the potential to occur in the project area.	Sections 2.1.11.3; 2.1.11.4; 3.6 - 3.7; and 4.4 - 4.5.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

As previously addressed in Section 1.1, Anadarko is proposing to construct, operate, and maintain 32.7 miles of buried 8-inch diameter and 6-inch diameter CO₂ gas pipeline and related facilities. The pipeline would be used to transport CO₂ gas from an existing valve terminal that is part of the Exxon/Mobil Shute Creek CO₂ Distribution Pipeline System to the existing Monell Field.

The proposed Monell CO₂ Pipeline would begin at the existing Exxon/Mobil connection in the SWNW1/4 of Section 15, T23N, R100W, and would parallel an existing Duke Energy Field Services' Bravo Interconnect pipeline for 14.6 miles to a point in the NWSW1/4 of Section 11, T21N, R99W. The remaining 18.1 miles of new pipeline construction would begin at this point and proceed south into the Monell Field at the Monell #90 well in the center of the NESE1/4 of Section 11, T18N, R99W. Construction of the pipeline would require a 50-foot wide temporary ROW that would be reclaimed following pipeline installation. Operation and maintenance of the pipeline would require a 30-foot wide permanent ROW.

Anadarko proposes to install two main facilities on the pipeline, a metering station and a booster pump station. The metering station would be constructed at the existing valve terminal on the Exxon/Mobil CO₂ pipeline. A 60 HZ, 120/208 V, AC 3 phase generator would be used to power the meter station. The booster station would be constructed in the SESW1/4 of Section 35, T19N, R99W. The booster pump station would occupy approximately 3.67 acres. Electric motors would drive all the pumps located at the booster pump station. Anadarko also would locate the primary cathodic protection beds at the booster pump station. Depending upon the results of soil studies, Anadarko may also locate a second set of cathodic protection beds north of the booster pump station within the pipeline ROW. Anadarko also proposes to install three valve stations, seven temporary work areas in addition to the meter station and the booster pump station on the pipeline. The three valve stations and the metering station would be located within the ROW. The seven work areas would temporarily require an additional 16.05 acres outside the pipeline ROW.

Anadarko is also proposing to upgrade 1.4 miles (7,400 feet) of existing two-track roads as access to the proposed pipeline construction and operation. Two-track roads would be bladed, ditched and crowned with a 12 - 14 foot running surface. Where necessary, pit run gravel would be applied to the road surface.

Initially Anadarko would install one or two 300 horsepower (HP) pumps to boost the pressure of the CO₂ for injection. As demand for product increases, Anadarko would install additional pumps up to a maximum of five pumps. A 300 HP, 4160 V, 3 phase, 60 cycle, 3600 RPM electric motor would drive each pump.

An existing electric power supply, located in Section 35, T19N, R99W would support the proposed booster pump station.

2.1.2 Disturbance Estimates

As previously stated, Anadarko is proposing a 50-foot wide temporary ROW during construction. Vehicle and construction equipment use of the 32.7 mile length of this 50-foot wide ROW would result in the temporary disturbance of approximately 198.24 acres. Upon completion of the pipeline construction, Anadarko would reclaim the ROW with native plant species (see Table 2-3).

Use of the temporary work areas would result in the temporary disturbance of approximately 16.05 acres. All work areas would be reclaimed after construction. The booster pump station would require an additional long-term disturbance of 3.67 acres outside the pipeline ROW. Upgrading of 1.4 miles of two-track roads to a 12-14 foot ditched and crowned running surface would result in the long-term disturbance of up to 5.08 acres outside the pipeline ROW. Disturbance associated with the project are summarized in Table 2-1.

Table 2-1: Temporary and Long-term Surface Disturbance Calculations within the Monell CO₂ Pipeline Project Area

Facility	Public (Fed)	Private (Pri)	Preliminary Disturbance ¹ 50' width	Permanent ROW ² 30' width
Pipeline	16.15 mi	16.56 mi (Pri)	97.88 acres (Fed) 100.36 acres (Pri)	58.73 acres (Fed) 60.21 acres (Pri)
Temp Work Areas – Laydown Areas	400' X 400' 3.67 acres	3 – 400' X 400' 11.01 acres	3.67 acres (Fed) 11.01 acres (Pri)	0 acres
Temp Work Areas – Boring Sites	150' X 200' .69 acres Railroad Bore	100' X 250' .57 acres I-80 Bore		
	2 – 50' X 100' ³ .22 acres Twelvemile Gulch Bore Black Rock Creek Bore	50' X 100' .11 acres CR 4-24 Bore	0.69 acre (Fed) 0.68 acres (Pri)	0 acres
Booster Station		400' X 400' 3.67 acres	3.67 acres (Pri)	3.67 acres (Pri)
Access Roads	800' NW NE 20-22N-99W 0.55 acres	1400' 17-22N-99W 0.96 acres	2.67 acres (Fed) 2.41 acres (Pri)	2.67 acres (Fed) 2.41 acres (Pri)
	2600' W NW	2000'		

¹ Assumes pipeline width on private lands is the same as public lands.

² The pipeline ROW and temporary work areas would be fully reclaimed.

³ Boring sites would be located within the temporary ROW. The metering station would be located within the permanent ROW.

Facility	Public (Fed)	Private (Pri)	Preliminary Disturbance ¹ 50' width	Permanent ROW ² 30' width
	26-21N-99W 1.79 acres	23-21N-99W 1.38 acres		
	200' SE NE 4-19N-99W 0.18 acres	100' 35-19N-99W 0.07 acres		
	300' SW NW 15-23N-100W 0.20 acres			
		Total Acres Federal	104.22	61.40
		Total Acres Private	118.13	66.04
		Total Acres All Lands	222.35	127.44

2.1.3 Construction Operations

Anadarko established a flagged survey along the proposed route. The pipeline would run parallel to the existing Duke Bravo pipeline route from Section 15, T23N, R100W to an end point of Section 11, T21N, R99W. Anadarko would maintain a minimum distance of 10 feet between the centerline of the Duke pipeline and the edge of the proposed ROW. After crossing the Duke Bravo pipeline just after the proposed metering station, the Monell CO₂ Pipeline would stay to the east of Duke's existing route.

The design, engineering, maintenance, and inspection of the proposed pipeline would be performed by Anadarko personnel or their contractors in accordance with safe and proven engineering practices. Specifically, Anadarko would design and construct the pipeline in accordance with ASME B31.4 (American Society of Mechanical Engineers) "Liquid Transportation Systems for Hydrocarbons, Liquid Petrochemicals, Anhydrous Ammonia, and Alcohols" and Department of Transportation (DOT) 49 CFR Part 195 "Transportation of Hazardous Liquids by Pipeline." Anadarko would protect the pipe from external corrosion using external coatings and cathodic protection. Anadarko expects internal corrosion to be negligible under normal operating conditions because the water dew point would be less than the minimum operating temperature. Pipe materials would conform to the requirements of American Petroleum Institute (API) 5L PSL-2, Specifications for Line Pipe.

The proposed pipeline from the meter station to the booster pump station would consist of 8-inch nominal diameter, 0.322 inch wall thickness, Grade API-5L X-52 pipe with a maximum allowable operating pressure (MAOP) of 2688 psig. The pipeline from the booster station to the terminal point in the Monell Field would consist of 6-inch nominal diameter, 0.280 inch wall thickness, Grade API-5L X-42 pipe with an MAOP of 2500 psig. Thicker or higher grade pipe at crossing points may be used, depending upon the external loads, in conformance with applicable law.

Anadarko would begin construction upon receipt of authorization from the BLM. Anadarko expects pipeline construction to take approximately 120 days. Anadarko would notify BLM at least 5 days prior to the anticipated start of construction and/ or surface-disturbing activities.

Anadarko anticipates that the types of equipment used to construct the pipeline would consist of, but not necessarily be limited to, trenchers, tractor trailers, 2-ton trucks, pickup trucks, ditch-padding machines, seed drillers, tractors, backhoes, trackhoes, side-boom caterpillars, and welding trucks. Anadarko would confine all equipment and vehicular access for the pipeline project to the roads and ROWs authorized by this action.

Anadarko would haul pipe and other construction materials to the job by truck, as needed, and store it within the ROW or at authorized staging areas. Anadarko would use a bending machine to bend the pipe to fit the trench. Anadarko would align sections of pipe and weld them together, perform nondestructive testing, and protect the welds with shrink sleeves. Anadarko would then use side-boom caterpillars to lower the pipe into the trench. In rocky areas, Anadarko would pad the bottom of the pipe with a ditch-padding machine either with or without the use of sandbags. As an additional precaution in rocky areas, Anadarko would screen approximately 12 to 14 inches of material with a ditch-padding machine on top of the pipeline.

If construction on frozen soil is necessary, Anadarko would apply for an exception from BLM. If the pipeline ROW is granted at a time when frozen soils exist, then Anadarko would consider the following construction options:

- 1) Anadarko would clear sagebrush from the entire width of the ROW. Anadarko would allow the ROW surface to thaw and would scrape melted topsoil to side of the ROW utilizing a dozer and/or blade. Anadarko would continue the scraping and thawing process until six inches of topsoil has been removed.
- 2) After the ROW is cleared and graded, Anadarko would dig a trench 2 to 3 feet wide with a trencher or, in rocky areas or where the pipeline changes direction, with a backhoe or trackhoe. Anadarko would place the proposed pipeline at such a depth as to maintain a minimum of 36 inches of cover, except at road crossings, where the minimum cover would be 48 inches. Spoil and topsoil would be wind-rowed separately along the side of the trench.

The top six inches of topsoil would be salvaged along the entire length and width of the 50-foot wide construction ROW. Following pipeline placement, Anadarko would backfill the trench using an angle dozer, auger, or blade and would

compact the soil to prevent subsidence. Anadarko would dispose of any excavated material that could not be placed in the trench in conformance with applicable landowner or agency requirements. After construction and prior to topsoil replacement, Anadarko would leave no berms, windrows or mounds on the surface except those that are authorized by the Authorized Officer (AO) that are needed for continued erosion control or pollution prevention.

Anadarko would hydrotest the pipeline following backfilling of the trench, except at the final tie-in locations, which are used to separate the hydrotest sections. During the hydrotest, Anadarko would fill the pipeline with water obtained from a permitted source and pressurize it to 1.25 times the designated maximum operating pressure for 4 hours to verify integrity. Anadarko intends to pump the test water from the Monell No. 3 Water Source Well in NE1/4 Section 26, T19N, R99W, which is already servicing the Monell Field as part of the waterflood project. Anadarko would not obtain water from streams or impoundments for use in this project.

After pipeline construction is completed, Anadarko would install markers at line-of-sight intervals and at road crossings to identify the pipeline's location within the ROW.

2.1.4 Highway, County Road, and Railroad Crossings

To install the pipeline along its proposed route, Anadarko would be required to make several crossings of existing features. These features include:

- Interstate 80;
- Union Pacific Corporation (UPC) Railroad (on BLM lands and across UPC ROWs);
- Sweetwater County Roads 4-82 & 4-24 (RSGA, BLM, and Anadarko Land Corp lands);
- Several Improved and Unimproved Roads;
- One electrical powerline and several existing pipelines.

Anadarko would construct all crossings in accordance with standard industry practices and the requirements of the applicable regulatory agency or private land owner.

The westerly edge of the Anadarko ROW would be at least 10 feet offset from the centerline of the existing Duke Energy pipeline.

2.1.4.1 Electrical Transmission Line Crossings

Anadarko would employ the following safety measures when working near or crossing powerlines that are located near the proposed ROW:

-
- 1) A minimum of 15 feet would be maintained from the trench to nearest power pole or appurtenances;
 - 2) OSHA clearances between live 230 kV transmission lines and any vehicle or equipment would be maintained;
 - 3) Prior to construction Anadarko would submit ROW crossing permits with surveyed drawings to the local utility companies;
 - 4) Anadarko would be responsible for all cathodic protection studies/mitigation; and
 - 5) Anadarko would post warning signs 50 feet on either side of the pipeline crossing when crossing an existing power transmission ROW.

2.1.4.2 Stream and Wetland Crossings

Regarding streams and wetlands, the proposed pipeline would be constructed in accordance with Section 404 of the Clean Water Act, Executive Order 11990 (wetland protection) and Executive Order 11988 (floodplain management). The proposed pipeline would cross several intermittent streambeds (see Table 2-2 and Figure 2-1) located along the route. Other smaller drainages and wetlands would be crossed. The pipeline would be buried in a trench at certain stream crossings (see Table 2-2) and would be bored at Twelvemile Gulch, Black Rock Creek and Patrick Draw-Bitter Creek. Boring equipment would be stationed on the upper banks of these drainages, with the edge of the disturbance closest to the stream at least ten feet back from the edge of the riparian zone. All stream banks would be returned and stabilized to their original slope. Anadarko has aligned the proposed crossings to minimize impacts on riparian and wetland vegetation. The inner gorge of ephemeral channels would have a minimum distance of 100-feet between them and disturbance areas. Trenching would not occur through streams or wetlands with open water or saturated soils.

Clearing for the minimum construction ROW width would be 50 feet or less, where practical. Near streams and wetlands (see Table 2-2), techniques would include the use of wide-track or balloon tires, or standard equipment operated on timber riprap or mats. Sediment barriers would be installed immediately upslope of the wetland boundary to minimize effects on any adjacent wetlands. Woody vegetation in wetlands would be cleared using the least disruptive economically feasible method. Grass or herbaceous vegetation would not be removed except immediately over the ditch line or in rough/broken terrain. Topsoil would not be stripped from the ROW near wetlands except over the trench line and where required to prepare a level work surface for pipe-laying equipment. Spoil material and topsoil from the trench would be segregated within the ROW. If standing water and unstable soils interfere with construction, the trench may be dewatered by pumping. Trench water would be disposed of in accordance with the Wyoming Department of Environmental Quality (WDEQ) regulations. In saturated wetlands, soils would be protected from traffic impacts by the use of timber mats or other supportive material. Temporary fill would not be brought into the wetland to stabilize the working area. After the pipe is installed, the

trench line would be backfilled and the topsoil replaced. The salvaged topsoil, which would contain seeds and propagules from wetland species, would be reapplied to the areas from which it was stripped to maximize reclamation success. In hilly areas, depending on the pipeline gradient, sacks filled with sand or smooth soil may then be placed in the trench as barriers, perpendicular to the pipe at regularly spaced intervals to prevent water from running down the trench during rain storms and from washing out the backfill. When these preparations are completed, the areas between and over the sack breakers may be backfilled with spoil and topsoil excavated from the trench.

Table 2-2: Stream crossings along Anadarko’s Proposed Pipeline Route

Name of Stream	Location (Section/ Township/ Range	Crossing Technique
Unnamed	Sec. 22, T23N, R100W	Trenching
Greasewood Wash	Sec. 34, T23N, R100W	Trenching
Unnamed	Sec. 3, T22N, R100W	Trenching
Black Rock Creek	Sec. 12, T22N, R100W	Boring
Twelvemile Gulch	Sec. 22, T22N, R99W	Boring
Dugout Draw	Sec. 14 and 23, T21N, R99W	Trenching
Unnamed	Sec. 28, T20N, R99W	Trenching
Patrick Draw to Bitter Creek	Sec. 2, T18N, R99W	Boring

2.1.5 Hazardous Materials

The following measures would be taken for the prevention and containment in case of accidental discharges in accordance with applicable laws.

- 1) Refueling of machinery and fuel storage would not be allowed within 500 feet of a perennial, intermittent, or ephemeral stream channel.
- 2) To conform with state and Federal regulations, any used or unused fuel, engine oil or lubricants would be stored in labeled containers and disposed of at an approved site. Lubricants or fuels would not be stored within 500 feet of a perennial, intermittent or ephemeral stream.
- 3) Anadarko would conform with provisions of the *Toxic Substances Control Act of 1976*, as amended (15 United States Code [USC] 2601, et seq.) with regard to any toxic substances that are used, generated by, or stored on the ROW or on facilities authorized under ROW grants (see 40 CFR 702-799 and especially provisions on polychlorinated biphenyl-- 40 CFR 761.1-761.193). Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity as established by 40 CFR 117.3 would be reported as required by the *Comprehensive Environmental Response*,

Compensation, and Liability Act of 1980, Section 102 B. Copies of reports required by Federal or state agencies for a release or spill of any hazardous material would be furnished to the AO within 5 working days of occurrence.

- 4) Anadarko agrees to indemnify the U.S. Government against any liability arising from the release of any hazardous substance or hazardous waste (as defined in the *Comprehensive Environmental Response, Compensation and Liability Act of 1980*, 42 USC 9601 et seq., or the *Resource Conservation and Recovery Act of 1976 [RCRA]*, 42 USC 6901 et seq.) on their respective ROW, unless the release or threatened release is wholly unrelated to Anadarko activities on the ROW. This agreement is applied without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

2.1.6 Testing and Safety

Anadarko would hydrotest multiple sections of the pipeline except at the final tie-in locations which are used to separate the hydrotest sections. During the hydrotest, Anadarko would fill the pipeline with water obtained from a permitted source and pressurize it to 1.25 times the designated maximum operating pressure for 4 hours to verify integrity. Anadarko intends to pump the test water from the Monell No. 3 Water Source Well in NE/4 Section 26, T19N, R99W, which is already servicing the Monell Field as part of the waterflood project. Anadarko would not obtain water from streams or impoundments for use in this project. Hydrotesting would occur in segments of the pipeline to reduce the volume of hydrotest water needed. Water used for hydrostatic testing would be disposed of to the surface in accordance with all applicable Federal and State requirements and permits. Erosion control measures such as hay bales would be used to minimize erosion due to water discharge.

Prior to placing the pipeline in CO₂ service, Anadarko would submit to the BLM AO a certificate of construction verifying that their pipeline has been constructed and tested in accordance with the terms of the ROW grant and in compliance with the plans and specifications and all applicable Federal and state laws and regulations.

Anadarko would inspect the pipeline in accordance with DOT regulations to check erosion, pipe exposure, hazardous ROW conditions, unauthorized encroachment on the ROW, and any other situations that may result in a safety hazard or may require preventive maintenance. These inspections would be conducted on foot, by air, or from a vehicle along existing roads. Vehicles would not traverse the ROW without permission from the BLM. If damage should occur to pipes, repair or replacement of the pipeline would be completed. Anadarko would develop line break and emergency procedures, which would be implemented in the event of an emergency. These procedures would be available for review at the Anadarko office in Rock Springs.

2.1.7 Completion Operations

Following testing of the pipelines, a clean-up crew would begin completion and inspection of the system. Completion operations would require approximately 2 weeks.

2.1.8 Pipeline Operation and Maintenance

Initially the pipeline would transport 20 to 55 million standard cubic feet per day (MMCFD) of CO₂. If demand increases and Anadarko installs a fifth booster pump, the pipeline could transport up to 75 MMCFD of CO₂.

For maintenance activities, Anadarko would access the pipeline by roadway, on foot, and by air. Only if repair was needed would Anadarko drive within the 30-foot wide permanent ROW. Reclamation of any areas disturbed would occur following repair.

2.1.9 Reclamation

Anadarko would rip, scarify, grade, and contour all disturbed areas to preconstruction conditions, leaving the surface of the ROW as rough and uneven as feasible for improved seed establishment. Topsoil would be evenly spread and disturbed areas would be seeded with native species to eventually blend with the surrounding terrain. Appropriate measures would be employed to prevent erosion through the use of construction diversion terraces, rip-rap, matting, and water bars. Water bars would be placed approximately every 25 feet on steep slopes. Drainages encountered during construction would be cleared of soil and debris and backsloped to their original contours.

All disturbed areas along the pipeline corridor would be reseeded in accordance with Appendix A (Reclamation Plan) of the CD/WII EIS Record of Decision. Anadarko would use application rates and seed mixtures for upland areas, saline lowlands, and other lowland sites as directed by the BLM. Seeding would take place during the spring or late fall when the ground is not frozen. In suitable areas, the seed mixture would be planted using a drill equipped with a depth regulator to ensure proper depth of planting. The seed mixture would be evenly and uniformly planted over the disturbed area. Areas not appropriate for drilling, such as steep slopes, would be broadcast-seeded and raked or chained to cover the seed. Seeding rates for broadcast-seeded areas would be double that used in drill-seeded areas. Seeding would be repeated until a satisfactory stand is established as defined in the CD/WII ROD Reclamation Plan. Evaluation of growth would not be made before completion of the first growing season after seeding. Certified weed-free seed would be used. Seed mixes and seeding rates to be used in the project area are summarized in Table 2-3.

Table 2-3: Monell CO₂ Pipeline Seed Mixes

Species	Seed Rate (PLS/acre)²
Grasses	
Bluebunch wheatgrass (<i>Elymus spicatum</i>)	3.0
Indian ricegrass (<i>Oryzopsis hymenoides</i>)	3.0
Needle-and-thread (<i>Stipa comata</i>)	3.0
Basin wildrye (<i>Elymus cineris</i>)	3.0
Forbs	
Gooseberry globemallow (<i>Sphaeralcea grossulariaefolia</i>)	1.0
Wild blue flax (<i>Linum lewisii</i>)	0.10
Shrubs	
Shadscale (<i>Atriplex confertifolia</i>)	1.0
Spiny hopsage (<i>Grayia spinosa</i>)	2.0

Anadarko would be responsible for weed control on the disturbed areas within the limits of their ROWs and would consult with the AO and/or local authorities for acceptable weed control methods. Noxious weed control would be conducted for the life of the project (30 years) or until abandonment of the pipeline.

2.1.10 Abandonment

At the end of the useful life of the pipelines, Anadarko would obtain necessary authorizations from the BLM to abandon the facilities. Anadarko would contact the AO to arrange a pre-termination conference and a joint inspection of the ROW to agree on an acceptable abandonment plan.

In-place pipeline abandonment would be accomplished in accordance with the policies and standards employed by BLM at the time of abandonment. The pipeline would be purged of all combustible materials and retired in place. Anadarko would remove all aboveground facilities and dispose of unsalvageable materials at authorized sites. The abandoned ROW would revert to the control of the landowner.

2.1.11 Applicant Proposed Environmental Protection Measures

The following sections summarize various applicant proposed practices that would be implemented as part of the Proposed Action to avoid or minimize negative effects on biotic and abiotic resources.

2.1.11.1 Visual Resources

In order to minimize impacts on visual resources, Anadarko has committed to the following measures:

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- 1) The pipeline would be buried. Following construction, the ROW would be reclaimed.
 - 2) Temporary work areas would also be reclaimed following construction.
 - 3) Proposed buildings within the ROW would not exceed one-story and would be painted with BLM specified colors to blend into the surrounding area.

2.1.11.2 Domestic Livestock and Feral Horses

In order to protect domestic livestock and feral horses from injury, Anadarko would not leave any given segment of the pipeline trench open for more than 10 days. Anadarko would also space gaps in the trench so that no more than one mile of trench would be open, thus allowing for the passage of vehicles, livestock, and wildlife. Anadarko would inspect open trenches daily for trapped livestock or wildlife. Anadarko would notify appropriate livestock permittees when trenching is proposed to occur in their allotments.

Prior to construction, signs would be posted on access roads in the active construction areas to warn about the presence of domestic livestock, wild horses and wildlife in the area.

Construction traffic would be directed to avoid the 12-Mile Well area when possible.

2.1.11.3 Vegetation Resources

Should BLM determine it necessary, surveys for Nelson's milkvetch would be conducted within the proposed ROW prior to surface disturbing activities. Should Nelson's milkvetch be documented within the construction zone, Anadarko would work with the BLM on measures to mitigate any impact to the species.

Following construction, the ROW would be reclaimed with native seed mixes specified by the BLM.

2.1.11.4 Noxious and Invasive Weeds

In order to prevent the introduction and spread of noxious and invasive weed species into the project area the following measures would be implemented:

- 1) Anadarko and their contractors would power-wash all construction equipment and vehicles prior to the start of construction. Any vehicles traveling between the project location and outside areas would be power-washed on a weekly basis.

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- 2) The new pipe and other construction materials would be treated with a BLM approved pesticide prior to being transported on the project area from storage locations.
 - 3) Anadarko would implement an intensive reclamation and weed control program beginning with the first growing season after project completion. Anadarko would reseed any disturbed areas using native plant species indigenous to the project area (See Table 2-3 for seed mixes and seeding rates). Seeding applications would continue until determined successful as defined in Reclamation Plan (CD/WII ROD). Weed control would be conducted through an approved pesticide use and weed control plan from the BLM AO.

Regarding herbicide use, Anadarko would comply with all Federal and state laws and with registered uses and limitations imposed by the AO. Before using herbicides, Anadarko would obtain written approval from the AO of a plan showing the type and quantity of material used, species to be controlled, application methods, storage locations, container disposal, and any other information deemed necessary by the AO.

2.1.11.5 Wildlife Resources

Western Burrowing Owl

If construction within prairie dog colonies is proposed between March 1 and August 15, surveys for the burrowing owl would be conducted by a BLM-approved wildlife biologist in all four prairie dog colonies proposed for disturbance. Should nesting burrowing owls be documented within the project area, construction would be avoided within a 1/2-mile radius of the nest site during the active nesting and fledging season.

Mountain Plover

If construction within prairie dog colonies is to begin or continue between April 10 and July 10, Anadarko would fund surveys for mountain plovers. Plover surveys would be conducted according to the United States Fish and Wildlife Service's (USFWS) *2002 Mountain Plover Survey Guidelines* (USFWS 2002a) by a BLM-approved biologist. Should nesting plovers be documented within 1/4 mile of the pipeline, construction within 1/4 mile of the nest would be halted until after July 10.

Ferruginous Hawk

If construction is proposed between February 1 and July 31, surveys of the three nests within Section 17, T22N, R99W and Sections 9 and 10, T21N, R99W would be conducted by a BLM-approved wildlife biologist. If any of the three nests are documented as active, construction would be avoided within a one-mile radius of the nest site from February 1 through July 31 or until young have fledged the nest.

Greater Sage-Grouse

Should project construction begin or continue between February 1 and July 31, a lek survey would be conducted prior to allowing construction within two miles of the lek in Section 15, T18N, R99W. If the lek is active, construction would be avoided between 6:00 pm and 9:00 am within 1/2 mile of the lek from March 1 to June 30. Construction may also be limited within a two-mile radius of the active lek in order to protect nesting and brooding habitat. As cited in the Green River RMP, the actual area to be avoided, scope of the activity limitation, and appropriate time frame for limitation would be determined on a case-by-case basis by the BLM and Anadarko.

Black-Footed Ferret and White-Tailed Prairie Dogs

Construction of any type, storage of any project materials or equipment, driving or parking of employee or contractor vehicles would not be allowed in specific prairie dog colonies (colonies 1, 2, 3, 4, 6, 8, and 11) as illustrated on the map in Appendix B. Anadarko would provide employees and contractors with a map of the areas to be avoided and would discuss the importance of avoidance of these colonies during pre-construction meetings. Prior to construction, Anadarko would also have the boundaries of these areas flagged by a BLM-approved contractor to prevent any accidental disturbance of the areas.

2.1.11.6 Soils

Anadarko would remove the top 6 inches of topsoil along the ROW, separate and conserve the topsoil during excavation, and reuse the topsoil as cover on disturbed areas to facilitate regrowth of vegetation. During stockpiling, topsoil would be protected as determined necessary by the BLM using mulch, netting or other appropriate means.

No construction would occur when soils are saturated. Soils are considered saturated when ruts form three inches deep or greater.

Water bars would be placed approximately every 25 feet (or as often as necessary) on steep slopes to prevent erosion. Water bars and other erosion prevention measures would also be applied in Sections 9, 22, 27, and 35, T19N, R99W and Section 12, T22N, R100W where soil types present water erosion hazards.

Anadarko would minimize construction in areas of steep slope (i.e., >25%) and sand dunes and would apply special slope-stabilizing techniques (e.g., mulch, netting, soil stabilizers) if construction cannot be avoided in these areas.

During the reclamation process, the surface of the ROW would be left as rough and uneven as feasible to blend with the surrounding environment and facilitate seed establishment and reclamation.

All drainage crossings would be designed to carry out at least a 10-year/24-hour storm event in accordance with Section 9113 of the BLM Manual.

Anadarko would restrict off-road vehicle activity by employees and contractors. Anadarko would implement a SWPPP for all construction activities on the ROW. This SWPPP would be filed with the WYDEQ. As part of this plan, a list of Best Management Practices (BMPs) would be identified that would help to control erosion and sedimentation. These BMPs could include but not be limited to water breaks, sand bag berms, retention basins, hay bale dikes, and silt fences. These BMPs would be left in place and maintained until the ROW has attained 80 percent of predisturbance vegetation.

2.1.11.7 Surface and Groundwater Resources

No depletions of the Colorado River System would occur.

Project water for hydrostatic testing would not exceed 4,000 BBL, and would be obtained from the Monell No. 3 water source well in the NE1/4 of Section 26, T19N, R99W. Water used for hydrostatic testing would be disposed of to the surface in accordance with all applicable Federal and State requirements and permits.

All perennial and ephemeral streams would be re-contoured and stabilized to their original contour following construction of stream-pipeline crossings.

No ramps or breaches would be left across drainages that domestic livestock, feral horses, or wildlife could cross.

No berms would be left after backfilling of the pipeline trench, except those needed for continued erosion control or pollution prevention that are authorized by the AO.

The pipeline would be inspected in accordance with DOT regulations by Anadarko personnel to ensure that no leaks are occurring.

The pipeline would be horizontally directionally bored at Twelve Mile Gulch, Black Rock Creek and Patrick Draw-Bitter Creek. Stream crossings would be aligned to minimize impacts on riparian and wetland vegetation.

Where the pipeline intersects wetlands identified by the National Wildlife Federation, National Wetland Inventory (NWF-NWI), techniques would include the use of wide-track or balloon tires, or standard equipment operated on timber riprap or mats. Sediment barriers would be installed immediately upslope of the wetland boundary to minimize effects on any adjacent wetlands. If construction of the pipeline occurs when the wetlands in Sections 22 and 24, T23N, R100W are inundated/wet, measures to avoid impacts to these wetlands will be

developed by the BLM and Anadarko on a site-specific basis. Such protective measures could include re-routing of the pipeline, boring under the wetland, or other impact avoidance techniques. Woody vegetation in wetlands would be cleared using the least disruptive economically feasible method. Grass or herbaceous vegetation would not be removed except immediately over the ditch line or in rough/broken terrain.

Spoil material and topsoil from the trench would be segregated within the ROW. In saturated wetlands, soils would be protected from traffic impacts by the use of timber mats or other supportive material. Temporary fill would not be brought into the wetland to stabilize the working area. After the pipe is installed, the trench line would be backfilled and the topsoil replaced. The salvaged topsoil, which would contain seeds and propagules from wetland species, would be reapplied to the areas from which it was stripped to maximize reclamation success.

In hilly areas, depending on the pipeline gradient, sacks filled with sand or smooth soil may be placed in the trench as barriers, perpendicular to the pipe at regularly spaced intervals to prevent water from running down the trench during rain storms and from washing out the backfill. When these preparations are completed, the areas between and over the sack breakers may be backfilled with spoil and topsoil.

2.1.11.8 Paleontological Resources

Only one known paleontological site is located in the general area of the ROW. This site would be flagged and avoided by the construction crews. Anadarko does not plan to blast or disturb rock outcrops or other areas that may have paleontological value. Should fossil resources, specifically vertebrate fossil deposits be unearthed on public or Federal land during excavation, a paleontologist from the appropriate state or Federal agency would be immediately contacted and reasonable measures would be taken to identify and preserve the fossils. The AO would also be notified immediately. Construction would be allowed to continue in due course. This would be accomplished by making a slight pipeline position adjustment or reroute; by allowing construction to continue 100 meters past the point of discovery of the fossil resource; or by some other reasonable means suggested by BLM and acceptable to Anadarko that is designed to allow construction to move forward without delay while providing for the salvage, extraction or protection of the fossils.

2.1.11.9 Cultural Resources

Class III surveys have been completed on the area proposed for surface disturbance and reports were submitted to the BLM Rock Springs Office (Murray 1999 and Johnson 2002). Anadarko and contractors would inform their employees about relevant Federal regulations protecting cultural resources. If

any cultural remains, monument sites, objects, or antiquities subject to the *Antiquities Act of June 8, 1906* or the *Archaeological Resources Protection Act of 1979* are discovered on Federal land during construction, the discovery would be immediately reported to the AO. Anadarko would suspend operations in the immediate vicinity of such discovery and would be allowed to continue construction in due course. This would be accomplished by making a slight pipeline position adjustment or reroute; by allowing construction to continue 100 meters past the point of discovery of the fossil resource; or by some other reasonable means suggested by BLM and acceptable to Anadarko that is designed to allow construction to move forward without delay while providing for the salvage, extraction or protection of the discovered cultural resource.

2.1.11.10 Public Health and Safety

Prior to starting construction, Anadarko would hold an environmental and safety meeting with representatives of all the contractors. All of the Applicant Proposed Environmental Protection Measures and mitigative measures contained in the EA and the decision, if the decision is to approve the project, would be discussed at this meeting.

To minimize the possibility of fires during the construction phase, all equipment, including welding trucks, would be equipped with fire extinguishers.

Anadarko would designate a representative to be in charge of fire control during pipeline construction. The fire representative would ensure that each construction crew has fire fighting tools and equipment, such as extinguishers, shovels, and axes, available at all times. The number of tools needed would depend on the number of persons working in the area.

Anadarko would notify the AO of any fires during construction and would comply with all rules and regulations administered by the AO concerning the use, prevention, and suppression of fires on Federal lands.

2.1.11.11 Air Quality

In order to reduce the amount of vehicular traffic and associated emissions, members of the pipeline construction crew would be asked to car pool to and from the Anadarko office or surrounding cities and towns.

Water trucks would be used periodically or dust suppression along project area roads in order to minimize fugitive dust during pipeline construction.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed pipeline would not be constructed. Current land use practices and resource trends would continue as described

under the Affected Environment discussion in Chapter 3.0. Other proposals for use of lands would be considered on a case-by-case basis.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

“The Council on Environmental Quality regulations implementing NEPA require BLM to rigorously explore and objectively evaluate all reasonable alternatives and to briefly explain the reasons for any alternatives that are eliminated from detailed study (40 CFR 1502.14 (a)).” BLM considered three alternatives to the Proposed Action but eliminated them from detailed study for the following reasons.

Anadarko considered transporting carbon dioxide from the Brady Plant, located about 15 miles from the Monell Field, but eliminated this option from detailed study because the Brady Plant could not provide an adequate supply of carbon dioxide.

Anadarko considered installing a surface pipeline to transport carbon dioxide along the same ROW identified under the Proposed Action. Anadarko eliminated this alternative from detailed analysis because of the 2688 psig MAOP of the pipeline. A break in a surface pipeline containing this much pressure could have catastrophic results to anyone and any equipment located near the pipeline. Burying the pipeline provides the best protection against accidental collisions and intentional sabotage. Under generally accepted engineering and construction practices, burying a pipeline operating at this high of pressure is an essential safety feature.

Re-alignment of the pipeline ROW was also considered. This alternative was considered but eliminated from detailed analysis because the current location of the proposed pipeline avoids sensitive cultural resource issues in the general area of the ROW and utilizes an existing pipeline corridor to reduce surface disturbance. Archaeological research and testing of the Duke Energy Bravo Interconnect pipeline route indicated that deposition along the proposed Anadarko Monell CO₂ pipeline has a low probability of containing intact buried cultural deposits.

3.0 AFFECTED ENVIRONMENT

On the basis of existing information and surveys conducted for the proposed project, the following environmental issues and resources are analyzed in this EA: land use plans and controls; geology, minerals and paleontology; cultural resources, soils, watershed resources and wetlands; vegetation; and wildlife.

The environmental issues in Table 3-1 were reviewed to determine if analysis in this EA would be required. After careful consideration, it was determined that these elements would not be affected by the Proposed Action or the No Action Alternative for the reasons stated, thus detailed analysis in this EA is not necessary.

Table 3-1: Elements of the Human Environment Considered But Not Analyzed and Rationale

Environmental Element	Rationale
Air Quality	<p>Adverse effects on ambient air quality are not expected for the following reasons:</p> <ol style="list-style-type: none">1) Members of the pipeline construction crew would be asked to car pool to and from the Anadarko office or surrounding cities and towns.2) Water trucks would be used for dust suppression in order to minimize fugitive dust during pipeline construction.3) The use of CO₂ within the Monell EOR Program would potentially reduce CO₂ emissions from the Exxon Mobil Shute Creek Plant and put previously vented emissions to beneficial use by maximizing recovery of the oil resource where an infrastructure is already in place.4) As of June 30, 1999 there has been a net decrease in permitted potential NO_x emission of 10,807 tpy as a result of a PacifiCorp operations modification permit at the Naughton Station. This equates to a net cumulative reduction on potential NO_x emissions of 9,951.92 tpy since the start of tracking, January 1, 1996. Therefore, the BLM, WDEQ-AQD (Air Quality Department) and the USFS have agreed that it is appropriate to reduce the frequency of reporting on the status of NO_x emission levels from a quarterly to an annual report. <p>Based on the above information, adverse air quality impacts are not anticipated from the authorization of this action.</p>
Wilderness	No designated wilderness areas or Wilderness Study Areas are present.
Areas of Critical Environmental Concern	None Present
Prime/Unique Farmlands	None Present
Wild/Scenic Rivers	None Present

Environmental Element	Rationale
Hazardous or Solid Wastes	No chemicals subject to SARA Title III in amounts greater than 10,000 lbs. would be used. No hazardous substances as defined in 40CFR 355 in Threshold Planning Quantities would be used.
Water Depletion	No Colorado River System depletions would occur.
Forested Areas	None present
Recreation Resources	Recreational sites and integral vistas are not present in the project area.
Floodplains	Pipeline construction would not occur within 100-year floodplains of the Colorado River System or its tributaries.
Environmental Justice	No minority or economically disadvantaged communities or populations are present which could be affected by the Proposed Action or No Action Alternative
Visual Resources and Noise	VRM Class III would continue to be met because of the minor changes to the landscape and commitment to reclamation. All vehicles and construction equipment would be properly muffled to minimize construction related noise.
Geological Hazards	As the project area has not experienced any major earthquakes within historic times it is not likely to be affected by this type of geological disaster. Similarly, no trona shafts are known to occur within the proposed ROW, therefore subsidence would not occur.
Rangeland Standards and Guidelines	The proposed project would not adversely affect water, nutrients, and energy system flows. Surface impacts would be limited to blading and grading. Less than 7 Animal Unit Months (AUM) would be temporarily lost to forage as a result of the project.
Special Status Fish	The bonytail chub, Colorado pikeminnow, humpback chub, razorback sucker would not be affected by the alternatives because: 1) critical habitat does not occur in the project area for the four species; 2) no depletions of the Colorado River System would occur; 3) the pipeline would not contact primary tributaries of the Colorado River System; and 4) Anadarko would implement a strict SWPPP that would require specific methods be implemented the control erosion and sediment runoff.

3.1 SURFACE OWNERSHIP AND EXISTING LAND USES

As previously discussed, the ROW would be constructed on “checkerboard lands.” Surface owners include the BLM, Rock Springs Grazing Association, Anadarko Land Corporation, UPC, and WYDOT. Existing land uses within the Monell CO₂ project area include oil and gas production, domestic livestock grazing, wildlife habitat, recreation, and railroad activity. There would be no change in surface ownership as a result of the Proposed Action or No Action

Alternative, nor would there be any changes in designated land uses. As such, the issue is not discussed further in this EA.

3.2 GEOLOGY / MINERALS / PALEONTOLOGY / FLOODPLAINS

3.2.1 Geology

Detailed accounts of geology in the vicinity of the proposed pipeline are presented in the draft CD/WII EIS (BLM 1999; pp. 3-11 to 3-19 and 4-27 to 4-29). As the geologic environment would not be affected by the Proposed Action or No Action Alternative, the resource is not discussed further in this EA.

3.2.2 Minerals

The proposed pipeline route lies within the Red Desert Basin. The principal resources developed within the checkerboard surface ownership portions of the Red Desert Basin are oil and natural gas. The development and transportation of mineral resources is in conformance with the Green River RMP (BLM 1997a). The Proposed Action would contribute to the depletion of oil resources within the Green River Basin; however, as mineral production is in compliance with state and local land use guidelines, the depletion is not an adverse effect. As the alternatives would not adversely affect mineral resources, the issue is not discussed further in this EA.

3.2.3 Paleontology

The fossil record of the Green River Basin is well documented (BLM 1993) within the CD/WII EIS project area. Only one known paleontological site is located in the vicinity of the ROW. The location of this fossil is not disclosed in order to protect the resource. Based on Applicant Proposed Environmental Protection Measures discussed in Section 2.1.11.8, the Proposed Action and No Action Alternative are not likely to adversely affect paleontological resources. Therefore, the resource is not discussed further in this EA.

3.2.4 Floodplains

Minimal areas within the 100-year floodplain would be disturbed as the pipeline would cross streams at right angles and avoid or mitigate all other wetland areas.

3.3 CULTURAL RESOURCES

Class III surveys have been completed on the project area proposed for surface disturbance. Reports of these surveys were submitted to the BLM Rock Springs Office (98WWC-397 and 01-WAS-726). The following cultural values were identified by the BLM as occurring within close proximity of the proposed pipeline:

Native American Religious Concerns - No Native American religious concerns have been identified as a result of public scoping including outreach with potentially affected Native American Tribes.

Possible crossings of the Overland and Cherokee Trails and Bitter Creek Stage Road -The proposed pipeline would not be located in close proximity of the Overland and Cherokee Trails. The Bitter Creek Stage Road is located more than 750 feet east of the project area. It is not a National Register of Historic Places (NRHP) eligible stage road.

Lincoln Highway and Union Pacific Railroad -The portion of the Lincoln Highway within the proposed project area is considered to be a non-contributing portion of an otherwise NRHP eligible property. No important cultural resources would be affected by activities associated with the construction of the proposed pipeline. The proposed pipeline would intersect the Union Pacific Railroad.

A description of cultural sites within the project area and their eligibility/ineligibility for the NRHP is included in Table 3-2.

Table 3-2: Cultural Sites within the Monell CO2 Project Area

Site Number	Site Type	Eligibility for NRHP	Affected
48SW1226	Overland Trail	Eligible	Yes*
48SW1834	Lincoln Highway	Eligible	Yes*
48SW5682	Prehistoric Campsite	Eligible	Yes*
48SW6357	Union Pacific Railroad	Eligible	Yes*
48SW12132	Prehistoric Campsite	Eligible	No
48SW12172	Prehistoric Campsite	Not Eligible	Yes
48SW12175	Prehistoric Campsite	Not Eligible	Yes
48SW12176	Prehistoric Campsite	Not Eligible	Yes
48SW12177	Prehistoric Campsite	Not Eligible	Yes
48SW12178	Historic Campsite	Not Eligible	Yes
48SW12179	Prehistoric Campsite	Not Eligible	No
48SW13523	Prehistoric Campsite	Not Eligible	Yes
48SW13524	Prehistoric Campsite	Not Eligible (Destroyed)	N/A
48SW14038	Prehistoric Campsite	Not Eligible	No

*These sites will only be impacted within non-contributing portions. The Overland Trail setting will be affected but only from the non-contributing portion of the trail.

3.4 SOIL RESOURCES

Due to the state of Natural Resource Conservation Service (NRCS) soil surveys in Sweetwater County, complete soil mapping for the project area is not available (K. Johnson, NRCS, pers. comm., Oct. 2002). Using available information, of the multiple soil types that would be intersected by the proposed pipeline, six are defined as sensitive soil types/complexes. Sensitive soils are a concern under the Proposed Action because they have a tendency to erode and/or are difficult to reclaim and thus present management problems when they are disturbed. Descriptions of these soil types and their sensitivity to water erosion, wind erosion and reclamation are included in Table 3-3.

Table 3-3: Sensitive Soils Intersected by the Proposed Monell CO₂ Pipeline

Soil Description	Miles Crossed	Legal Location
Dines silt loam are deep, well-drained sandy loam soils. Permeability is moderate, runoff is slow, and the hazard of water erosion is slight. The hazard of blowing soil is severe, and therefore surface disturbance creates erosion problems.	0.71	Sec. 22, T19N, R99W Sec. 15, T23N, R100W
Boltus-Horsley loam complex consists of silty clay and alkaline loams forming rolling and hilly residual uplands. Permeability is slow, runoff is rapid and the water erosion hazard is very severe, therefore water discharge could cause erosion. Wind erosion hazard is moderate. Alkalinity is moderate to moderately strong and thus presents reclamation problems.	0.28	Sec. 35, T19N, R99W
Horsley-Youjay-rock outcrop occurs on rolling to steep erosional uplands associated with badland areas. Soils are shallow and well-drained. Permeability is moderately slow, runoff is medium to rapid, and the hazard of water erosion is severe, therefore water discharge could cause erosion. The hazard of soil blowing is moderate. Strong alkalinity also makes reclamation difficult in these soils.	.04	Sec. 12, T22N, R100W
Horsley-Huguston-rock outcrop is found on hilly residual slopes. These soils are generally between 5 and 14 inches to bedrock. Both soils are shallow and well-drained; permeability is moderate to moderately rapid. Runoff is medium to rapid, water erosion hazard is moderate to severe, therefore water discharge could cause erosion. Wind erosion hazard is moderate.	0.37	Sec. 9, 22, 27, T19N, R99W

Soil Description	Miles Crossed	Legal Location
Kandaly-Huguston-Teagulf complex are formed on eolian (wind-blown) sands, are very deep and excessively drained. Permeability is rapid, available water capacity is low, and water erosion hazard is low. Wind erosion hazard is severe and therefore surface disturbance creates erosion problems.	0.4	Sec. 3 and 34, T22N, R99W
Cotopaxi fine sands are fine dune-like sandy soils. Permeability is rapid, natural drainage is excessive, surface runoff is slow and the water erosion hazard is slight to moderate. Wind erosion hazard is very severe; therefore surface disturbance creates severe erosion problems.	1.9	Sec. 22 and 27, T23N, R100W

3.5 WATERSHED RESOURCES AND WETLANDS

The project area is drained by Bitter Creek and its tributaries. Most of the drainages in the project area are ephemeral, flowing less than 30 days/year in response to snowmelt or storm events. Some channels associated with these drainages have been incised in the past due to a variety of causes, and some are still actively eroding. All of the streams intersected by the proposed pipeline have NWF-NWI wetland habitats associated with them. The most common type of wetland the pipeline would encounter is an R4SBA wetland. R4SBA wetlands are classified by the NWI as Riverine, Intermittent, Streambeds, Temporarily Flooded.

The locations of streams and classifications of associated wetlands that are intersected by Anadarko's proposed pipeline are summarized in Table 3-4. Figure 3-1 illustrates the wetlands found along the pipeline route.

Table 3-4: Streams and Wetlands Intersected by Anadarko's Proposed Monell CO₂ Pipeline Route from North to South

Name of Stream / Wetland	Location (Section/ Township/ Range)	NWI Wetland Classification
Unnamed	Sec. 22, T23N, R100W	Palustrine, Unconsolidated Shore, Seasonally Flooded (PUSC)
Greasewood Wash	Sec. 34, T23N, R100W	Palustrine, Unconsolidated Shore, Seasonally Flooded (PUSC)
Unnamed	Sec. 3, T22N, R100W	Palustrine, Unconsolidated Shore, Seasonally Flooded (PUSC)
Black Rock Creek	Sec. 12, T22N, R100W	Palustrine, Emergent, Seasonally Flooded (PEMC) and Riverine, Intermittent Streambed (R4SBA)

Name of Stream / Wetland	Location (Section/ Township/ Range)	NWI Wetland Classification
Twelvemile Gulch	Sec. 22, T22N, R99W	Palustrine, Emergent, Seasonally Flooded (PEMC)
Dugout Draw	Sec. 14 and 23, T21N, R99W	Palustrine, Emergent, Temporarily Flooded (PEMA)
Unnamed	Sec. 28, T20N, R99W	Riverine, Intermittent, Streambed, Temporarily Flooded (R4SBA)
Patrick Draw to Bitter Creek	Sec. 2, T18N, R99W	Riverine, Intermittent, Streambed, Temporarily Flooded (R4SBA)

3.6 VEGETATION RESOURCES

3.6.1 General Vegetation

Vegetation in the analysis area is typical of the arid to semi-arid Wyoming flora, where precipitation and soil parent material are controlling factors for plant composition. The project area falls within the sagebrush steppe vegetation community. Representative plants within this community include Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), shadscale (*Atriplex confertifolia*), Spiny hopsage (*Graya spinosa*), black greasewood (*Sarcobatus vermiculatus*), Indian ricegrass (*Oryzopsis hymenoides*), thickspike wheatgrass (*Agropyron dasystacum*) and Douglas rabbitbrush (*Chrysothamnus viscidiflorus*).

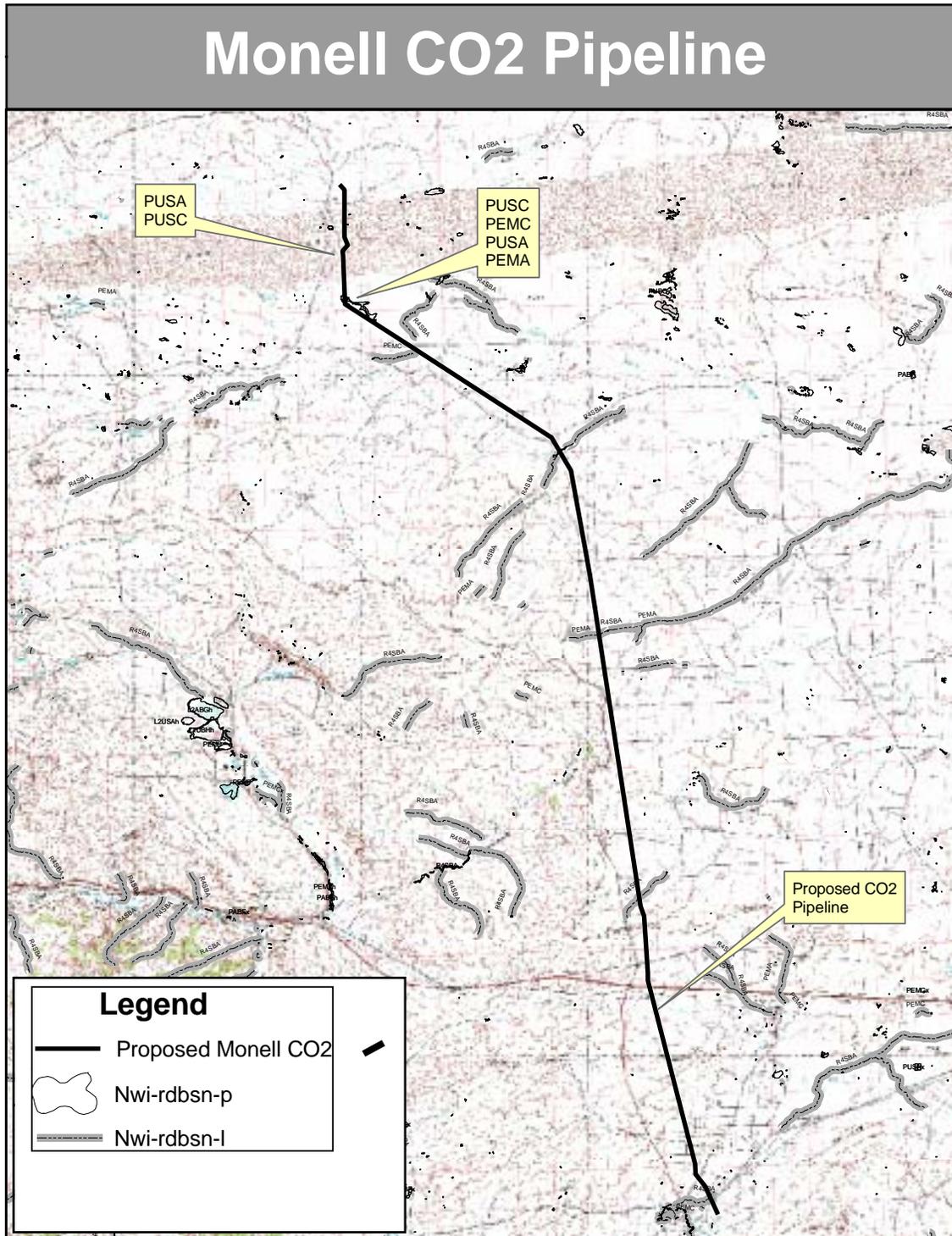
3.6.2 Special Status Plant Species

Ute Ladies'-Tresses (*Spiranthes diluvialis*)

The USFWS commented on the public scoping notice for this proposed project on August 21, 2002 (USFWS 2002b). Their comment letter, addressed to the BLM, specified several species that potentially could be found within the project area and therefore be affected by the proposed pipeline. Within this list, the USFWS identified one Federally Threatened plant species that they were concerned about Ute Ladies'-tresses.

The Ute Ladies'-tresses occurs primarily on moist, permanently sub-irrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers or perennial streams at elevations between 4,300 to 7,000 feet (USFWS 1995). Fluvial disturbance appears to be the main mechanism responsible for creating and maintaining Ute Ladies'-tresses habitat. The species often occurs on recently created riparian habitats such as point bars or sand bars, as well as areas that are regularly flooded, such as backwaters. Soils containing populations of the species are typically composed of alluvial material, ranging from fine silt/sand to gravels and cobbles. Critical habitat, as

Figure 3-1: Streams and Wetlands within Monell CO₂ Project Area



discussed under Section 4(a)(3) of the Endangered Species Act (ESA), has not been, nor is expected to be, designated for Ute Ladies'-tresses.

The permanently sub-irrigated or seasonally flooded soils required by the Ute Ladies'-tresses are not found within the Monell CO₂ pipeline project area. Since Ute Ladies'-tresses do not occur within the analysis area, BLM has determined there would be no effect to this threatened species. Thus, the species is not discussed further in this analysis.

Nelson's Milkvetch (*Astragalus nelsonianus*)

Nelson's milkvetch, a BLM Sensitive Species, may potentially be found in the project area. Nelson's milkvetch is an endemic plant found on alkaline clay flats, shale bluffs and gullies, and pebbly slopes in sparsely vegetated sagebrush, juniper (*Juniperus* spp.), and cushion plant communities commonly associated with ridges and slopes (BLM 2001; WYNDD 2002b). In Wyoming, it is known to occur from the Wind River, Green River, Washakie, southern Powder River, and Great Divide basins, Owl Creek Mountains, and the Rock Springs uplift in Fremont, Natrona, and Sweetwater counties (WYNDD 2002b). The species flowers from mid-May through late-June. Fruits are present through August. While suitable habitat for Nelson's milkvetch occurs within the immediate project area, there have been no comprehensive surveys to determine its presence or absence. Known populations of the species have been documented within one-mile of the proposed pipeline corridor (J. Glennon, BLM, pers. comm., Sept. 2002).

3.6.3 Noxious and Invasive Weeds

The introduction of non-native plants and noxious weeds is a concern for any area proposed for surface development activities. Noxious weeds are plants that are designated by a Federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property. A noxious weed is commonly defined as a plant that grows out of place and is competitive, persistent and pernicious (James et al. 1991). Invasive plants include not only noxious weeds but also other plants that are not native to this country. Many consider a plant invasive if it has been introduced into an environment where it did not evolve. As a result, invasive plants typically do not have any natural enemies (e.g., insects or other plants) to limit their reproduction and spread. Therefore, many invasive plants can spread through areas unchecked, producing significant changes to native vegetation. Based on field surveys of the project area by Buys & Associates (2002a), there is currently little to no weed establishment in undisturbed portions of the project area and along the proposed pipeline corridor.

3.7 WILDLIFE RESOURCES

Species' occurrences within the project area are dependent on habitat availability, relative carrying capacities, and degree of existing habitat

disturbance. The proposed ROW supports one primary wildlife habitat type, sagebrush steppe (Section 3.6). Free water is limited within the project area and therefore, provides the greatest habitat value for wildlife.

3.7.1 General Wildlife

Small mammals potentially found within the project area and surrounding region include cottontail rabbits (*Sylvilagus* spp.), white-tailed jackrabbit (*Lepus townsendii*), white-tailed prairie dog (*Cynomys leucurus*), and various species of rodents and bats.

Predator species occurring or potentially occurring within the project area include coyote (*Canis latrans*), badger (*Taxidea taxus*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), ermine (*Mustela erminea*), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), western spotted skunk (*Spilogale gracilis*), and bobcat (*Felis rufus*).

Smaller migratory birds common to the project area and surrounding region include common nighthawk (*Chordeiles minor*), Say's Phoebe (*Sayornis saya*), western kingbird (*Tyrannus verticalis*), horned lark (*Eremophila alpestris*), swallow species, common raven (*Corvus corax*), black-billed magpie (*Pica pica*), American crow (*Corvus brachyrhynchos*), rock wren (*Salpinctes obsoletus*), mountain bluebird (*Sialia currucoides*), loggerhead shrike (*Lanius ludovicianus*), several species of sparrow, lark bunting (*Calamospiza melanocorys*), McCown's longspur (*Calcarius mccownii*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), common grackle (*Quiscalus quiscula*), and brown-headed cowbird (*Molothrus ater*).

Herptiles potentially found in the region include wandering garter snake (*Thamnophis elegans vagrans*), Great Basin gopher snake (*Pituophis catenifer deserticola*), prairie rattlesnake (*Crotalus viridis viridis*), Great Basin spadefoot (*Scaphiopus intermontana*), western whiptail (*Cnemidophorus tigris*), sagebrush lizard (*Sceloporus graciosus*), and short-horned lizard (*Phymosoma douglassii*).

Although all of these species are important members of wildland ecosystems, most are common and have wide distributions within the region. Consequently, the relationship of most of these species to the proposed project is not discussed in the same depth as species which are rare, economically important, or otherwise of high interest.

3.7.2 Big Game

The principal big game species in the project area is pronghorn antelope (*Antilocapra americana*). Pronghorn from the Bitter Creek and Red Desert Herd Units occupy much of the project area on a year-round basis. The Red Desert Herd Unit lies north of I-80. The Bitter Creek Herd Unit lies south of I-80. The

proposed pipeline corridor traverses through approximately three miles of crucial pronghorn antelope winter range for the Red Desert Herd Unit. The small patch of crucial winter range is located just north of the pipeline corridor's intersection with I-80 (Sections 2-3, T19N, R99W and Sections 27, 28 and 34, T20N, R99W) (BLM 2002). The remainder of the project area is located within year-round pronghorn antelope habitat (BLM 1999).

Limited winter/yearlong mule deer habitat for the Steamboat and Baggs Herd Units, and elk habitat for the Steamboat and Petition Herd Units are found within the project area. Neither crucial winter range nor fawning/calving habitats for mule deer or elk are found in the project area (BLM 1999).

3.7.3 Feral Horses

The project area falls within and is adjacent to portions of two Wild Horse Herd Management Areas: Great Divide Basin and Salt Wells Creek (BLM 1999). The northern half of the pipeline corridor traverses through the Great Divide Basin Wild Horse Herd Unit north of I-80. The southern terminus of the pipeline corridor lies just north of the Salt Wells Creek Herd Unit.

3.7.4 Upland Game Birds

Two species of upland game birds occur on and are adjacent to the project area: mourning doves (*Zenaida macroura*) and Greater Sage-Grouse (*Centrocercus urophasianus*). Mourning doves are found throughout Wyoming and potential habitat is found in the project area. The species is highly adaptive, but prefers open land with scattered vegetation and requires trees or some type of structure for nesting. Concentrations of mourning doves are usually highest near powerlines, buildings and other areas of human disturbance (BLM 1999). As mourning dove populations and habitats are widely distributed throughout the state, the temporary disturbance of vegetation in the project area is not likely to adversely affect the species and they are not discussed further in this EA.

The upland game bird species of most concern is the Greater Sage-Grouse, which was recently classified as a Species of Special Concern by the Wyoming Fish and Game Department (WGFD). The Greater Sage-Grouse is discussed under Special Status Wildlife Species.

3.7.5 Raptors

The project area and greater surrounding region has documented nesting habitat for 11 species of raptors. These include the golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), merlin (*Falco columbarius*) prairie falcon (*Falco mexicanus*), Western burrowing owl (*Athene cunicularia*), great-horned owl

(*Bubo virginianus*), and long-eared owl (*Asio otus*) (BLM 2002). BLM records document a total of four known raptor nest sites within a one-mile radius of the proposed project (BLM 2002). This number includes three ferruginous hawk nests (one artificial nesting structure and two natural nests) and one burrowing owl nest site. These species are discussed under Special Status Wildlife Species.

Based on habitat types within the project area and surrounding region, species likely to occur there, known raptor phenology, and the lack of comprehensive recent survey data, it is likely that other breeding raptors have probably established territories within the project area and one-mile radius analyzed. Nest sites could occur on other cliff faces, on rock outcrops, and in white-tailed prairie-dog colonies.

The project area also supports potential hunting habitat for wintering bald eagles (*Haliaeetus leucocephalus*). This Federally Threatened species is discussed under Special Status Wildlife Species.

3.7.6 Special Status Wildlife Species

In accordance with the ESA, the lead agency in coordination with the USFWS must ensure that any action that they authorize, fund, or carry out would not adversely affect a Federally Threatened or Endangered species or species proposed for listing under the ESA. Candidate and BLM Sensitive species are managed to prevent a future listing as Threatened or Endangered. The sections below describe the special status wildlife species that may potentially be found within the project area (USFWS 2002c).

Black-Footed Ferret and White-tailed Prairie Dog

The Federally Endangered black-footed ferret's original distribution in North America closely corresponded to that of prairie dogs (Hall and Kelson 1959, Fagerstone 1987). In Wyoming, white-tailed prairie dog (*Cynomys leucurus*) colonies provide essential habitat for black-footed ferrets. Ferrets depend almost exclusively on prairie dogs for food and they also use prairie dog burrows for shelter, parturition, and raising their young (Fagerstone 1987). In accordance with the USFWS current threshold for white-tailed prairie dog colonies, a minimum of 200 acres of contiguous habitat and a minimum density of eight active burrows per acre is required to sustain a viable ferret population (USFWS 1989).

The project area falls within a portion of a large white-tailed prairie dog complex that extends for several miles east, west and south of the project area. In August of 2002, biologists from Buys & Associates, Inc. were requested by the BLM to conduct surveys of specific colonies of this complex within a two-mile radius of the proposed pipeline.

The goal of the surveys was three-fold:

- 1) to delineate and map the boundaries of prairie dog colonies within the vicinity of the project area (see map in Appendix B);
- 2) determine the density of active prairie dog burrows within colonies and the average density within the project area; and
- 3) determine if the colonies within the project area provide suitable habitat for the black-footed ferret.

Prairie dog colonies/concentration area mapping and burrow density estimates were completed according to protocols outlined in USFWS (1989) and Biggens, et al. (1989). The approximate density of active prairie dog burrows within the Monell CO₂ pipeline project area is 15 burrows/acre. As this density exceeds the USFWS minimum threshold of eight burrows/acre the white-tailed prairie dogs surrounding the project area provide potential black-footed ferret habitat. A report of these findings (Buys & Associates 2002a) was submitted to the BLM and the USFWS.

Based on the prairie dog survey findings, the USFWS required black-footed ferret surveys of colonies 5, 7, 9, and 10 (K. Erwin, USFWS, pers. comm., October 2002). Because the proposed pipeline would not directly intersect the remaining colonies and Anadarko has committed to complete avoidance (e.g., no storage of equipment, no parking of vehicles, etc.) of those colonies, ferret surveys were not required by the USFWS in colonies 1, 2, 3, 4, 8, and 11.

Nocturnal, spot-lighting surveys for black-footed ferrets were conducted in colonies 5, 7, 8, 9, and 10 according to protocol outlined by USFWS (1989). The surveys were designed and implemented by a wildlife biologist certified by the USFWS to conduct ferret surveys, as well as an assistant biologist. The surveys were conducted over a consecutive three-night period starting the evening of October 1 and ending the morning of October 4, 2002. Two diurnal inspections of the colonies were also completed to search for physical evidence of ferret use (e.g., scat, prairie dog skulls, diggings). No ferrets were observed during the nocturnal surveys and no sign was observed during daylight inspections of the colonies. These findings were summarized in a report submitted to the BLM and USFWS (Buys & Associates 2002b).

⁴ Black-footed ferret surveys were not required by the USFWS in area #8 since it would not be affected by the Proposed Action. However, surveys were nonetheless conducted in area #8 as it supports the highest density of active burrows and represents the most suitable habitat for the endangered ferret species.

In addition to Buys & Associates' ferret survey, the WGFD reported that numerous ferret surveys have been conducted in and around the project area, none of which have resulted in ferret observations (USFWS 2002b).

The USFWS responded to Buys & Associates' reports with a determination that "the project as proposed, will not adversely affect the black-footed ferret based on the negative observations of ferrets or their sign from the most recent survey of within the project area as well as the information provided by the WGFD (USFWS 2002c)."

The Proposed Action could affect prairie dogs in a positive way (and therefore the potential for ferret occurrence) over the long term by temporarily creating a ROW of open habitat, a preferred characteristic of the species for creation or extension of colonies (SWCA 1998).

Bald Eagle (*Haliaeetus leucocephalus*)

As of the July 12, 1995 Federal Register, the bald eagle is no longer classified as Endangered and has been downlisted by the USFWS to the status of Threatened in the lower 48 states. The species is recovering across its range.

The bald eagle is almost always found near water. The species is primarily a scavenger, feeding largely on dead and dying fish and carrion (e.g., ungulate species, waterfowl, rabbits, and other animals) (USGS NPWRC 2002).

No bald eagle nests have been documented within the project area. Bald eagle nests in the State of Wyoming are generally located in riparian habitat along large rivers. The bald eagle nest closest to the project area is located approximately 55 miles west of the project area along the Green River (J. Dunder, BLM, pers. comm., October 2002).

Primary wintering areas of bald eagles are typically associated with concentrations of food sources along major rivers that remain unfrozen whereby fish and waterfowl are available, and near ungulate winter ranges that provide carrion (Montana Bald Eagle Working Group 1990). During the winter months, bald eagles communally roost in cottonwoods along rivers and forage in upland habitats, such as the project area, for carrion and small mammals. Bald eagles are occasionally seen hunting in the project area during winter months, usually from early November through late March (BLM 1999).

Mountain Plover (*Charadrius montanus*)

The mountain plover is proposed for listing as Threatened under the ESA. This ground-nesting species' breeding habitat typically includes short-grass prairies and shrub-steppe landscapes; dryland, cultivated farms; and prairie dog colonies. Mountain plovers usually breed and build nests in areas with sparse vegetation or bare ground, conditions that can be created by prairie dogs, domestic cattle or other herbivores. Nests have also been documented on bare ground created by

oil and gas development activities (USFWS 2002a). Vegetation in short-grass prairie nesting habitats is typically less than four inches in height (Knopf 1994; USFWS 2002a). Nest sites within the shrub-steppe community are found within areas of little or no vegetation. In Wyoming, the mountain plover is most often found in areas historically or currently used by prairie dogs, bison and pronghorn antelope (WYNDD 2002a).

While comprehensive surveys for the species have not been conducted there, white-tailed prairie dog colonies within the Monell CO₂ pipeline project area do provide suitable habitat for mountain plovers and the species could occur there during the breeding and nesting season.

Yellow-Billed Cuckoo (*Coccyzus americanus*)

The yellow-billed cuckoo is designated as a Candidate species under the ESA in a portion of its range. The USFWS has found that the yellow-billed cuckoo west of the Continental Divide qualifies as a Distinct Population Segment (DPS); a population that is distinct and important to the species as a whole and is generally described geographically. Breeding and nesting habitat for the species in Wyoming is limited to open, streamside deciduous woodland with low, scrubby vegetation below 7,000-foot elevation (WYNDD 2002a). The yellow-billed cuckoo generally prefers cottonwood stands for foraging, and willow thickets for nesting (WYNDD 2002a). Yellow-billed cuckoo habitats are rare in Wyoming.

As the riparian habitats described above are not found within the project area, the yellow-billed cuckoo is not expected to occur there and would not be affected by the alternatives. Therefore, the species is not discussed further in this EA.

Western Burrowing Owl (*Athene cuniculara*)

The western burrowing owl is listed as a Sensitive species by the Wyoming BLM (WYNDD 2002a). The burrowing owl is a summer resident of open rangeland habitats throughout Wyoming (Luce, et al. 1997). The burrowing owl requires burrows of fossorial mammals, primarily badgers and prairie dogs, for nesting and roosting (Haug, et al. 1993). The project area provides nesting habitat for the burrowing owl. One documented burrowing owl nest site occurs in Section 9, T19N, R99W. The nest site was first documented as active in 1979 and was active in both 1980 since 1981. The nest was checked in 1985, 1986, 1996, 1997, and 1998 and has not been active. In addition, four burrowing owls were documented by Buys & Associates biologists in Section 34, T19N, R99W during the prairie dog surveys previously discussed. The owls were observed several times over the course of the prairie dog surveys.

Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk is listed as a sensitive species by the Wyoming BLM. Ferruginous hawks nest throughout Wyoming and occupy portions of the state during winter (Luce, et al. 1999). Large expanses of grassland and shrubland, where livestock grazing (vs. cultivation) is the predominant land use, provide the

most suitable habitat (Schmutz 1989, Johnsgard 1990). Typical nest sites include small trees, hilltops, rock outcrops, eroded banks, and even relatively level ground (Schmutz 1989). The ferruginous hawk primarily relies on two families of mammals for the majority of its food, *Leporidae* (rabbits and hares) and *Sciuridae* (ground squirrels and prairie dogs).

The project area provides nesting and foraging habitat for the ferruginous hawk. Three ferruginous hawk nests (1 artificial structure and 2 natural nests) occur within one mile of the proposed pipeline. Activity data on these nests is limited. Status of the artificial nesting structure in Section 17, T22N, R99W is checked by the BLM each year and has been active since the platform's construction. Activity of the natural ferruginous hawk nests in Sections 9 and 10, T21N, R99W was checked during the breeding seasons in 1995 and 1996. Both nests were documented as inactive and have not been checked since then.

Greater Sage-Grouse (*Centrocercus urophasianus*)

Although not formally listed as a species of concern by State of Wyoming or USFWS, the BLM considers the Greater Sage-Grouse a Sensitive species because of widespread losses of sagebrush habitat as well as impacts from drought, cattle grazing, predation, and hunting. The Greater Sage-Grouse is also an important game species in the State of Wyoming. As discussed in Section 3.6, much of the of the Monell CO₂ pipeline project area is covered by sagebrush community vegetation. Greater Sage-Grouse rely on a variety of habitats within a sagebrush dominated landscape to reproduce and survive throughout the year. Early in the spring, grouse gather at leks, or breeding display sites. Leks are usually in open areas such as playas, ridge tops, or burned areas that are surrounded by dense escape cover. After breeding, hens typically scratch out a nest under sagebrush (Connelly, et al. 1991) within approximately three miles of the lek (Schroeder, et al. 1999). Nest success is enhanced where both sagebrush and residual grass cover are taller and more dense (Gregg, et al. 1994). For the first month after hatching, the young depend on more open sagebrush stands with an abundance of forbs and insects, especially ants and beetles (Drut, et al. 1994; Schroeder, et al. 1999). Greater Sage-Grouse use a variety of habitats during fall, and the incidence of sagebrush in their diet increases as forbs become less available. During winter, grouse eat sagebrush leaves almost exclusively. Winter range is characterized by large expanses of dense sagebrush. The range of sagebrush density and height on the project area represents potential year-round habitat for sage-grouse.

One documented Greater Sage-Grouse lek occurs within two miles of the proposed pipeline in Section 15, T18N, R99W (BLM 2002). Lek attendance is checked almost every year by either the BLM or WGFD. The lek was active in the spring of 2001 and assumed to be active in the spring of 2002 based on presence of sage-grouse in the vicinity of the lek (J. Dunder, BLM, pers. comm., October 2002).

Sage Sparrow (*Amphispiza belli*)

The sage sparrow is listed as a BLM Sensitive species. The sage sparrow is regionally endemic to the state of Wyoming and adjacent states. Breeding habitat for the species is found throughout the counties of Wyoming, including Sweetwater (WYNDD 2002). During the winter, the sage sparrow is found throughout dry, brushy foothill habitat. The species breeds in brushy open country, mainly in stands of sagebrush. The sage sparrow diet consists primarily of seeds and insects. The sage sparrow is a likely inhabitant of the project area.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 CULTURAL RESOURCES

4.1.1 Proposed Action

The proposed pipeline ROW was re-aligned in several areas to avoid sites or artifacts eligible for the NRHP. The current alignment of the proposed ROW avoids all eligible cultural resources. Between two cultural resource surveys, 13 sites and four isolated artifacts were identified. None of these sites or artifacts are eligible for nomination to the NRHP. While these non-eligible sites would be affected by construction of the ROW, no eligible cultural resources would be impacted.

An open trench inspection was conducted for the Duke Energy Bravo Interconnect pipeline, which parallels the northern portion of the proposed ROW. Only one site (48W14038) was found as a result of this open trench inspection. Testing indicated that the site was not eligible for nomination to the NRHP. The results of the open trench inspection indicate that deposition along the proposed ROW has a low probability of containing intact cultural deposits.

Based on the information presented above, Mitigation and Monitoring Measures below, and the Applicant Proposed Environmental Protection Measures discussed in Section 2.1.11.9, the Proposed Action is not likely to adversely affect cultural resources.

4.1.2 No Action

As pipeline construction (and associated surface disturbance) would not occur, cultural resources would not be affected by the No Action Alternative.

4.1.3 Mitigation / Monitoring

Impacts to cultural resources would be mitigated following procedures as specified in 36 CFR 800 and/or the National Programmatic Agreement for Cultural Resources and Statewide Protocol. Class I and Class III inventories have been conducted on the project area. All resources identified by these inventories have been evaluated for eligibility for the NRHP by the BLM. The State Historical Preservation Office (SHPO) has been consulted as necessary. The proposed pipeline has been routed away from any NRHP eligible or listed sites. In addition to these practices, Anadarko has proposed additional measures to protect cultural resources in Section 2.1.11.9.

No mitigation or monitoring proposed for the No Action Alternative.

4.2 SOILS

4.2.1 Proposed Action

The majority of the pipeline occurs on level to rolling terrain of non-sensitive soils where few surface-disturbance issues would occur under the Proposed Action. Overall, the potential problems associated with pipeline construction would include reclamation of disturbed soils; increased wind and water erosion and subsequent sediment yield to project area drainages; and rutting of saturated soils from construction vehicles and equipment. However, the greatest soil concerns are the potential impacts of pipeline construction on sensitive soils (i.e., sandy soils and alkaline soils). These sensitive soils are again described in Table 4-1.

Table 4-1 Sensitive Soils Intersected by the Proposed Monell CO₂ Pipeline

Soil Hazards	Miles Crossed	Legal Location
Dines silt loam: Hazard of water erosion is slight. The hazard of blowing soil is severe, and therefore surface disturbance creates erosion problems.	0.71 mi	Sec. 22, T19N, R99W Sec. 15, T23N, R100W
Boltus-Horsley loam complex: Water erosion hazard is very severe; therefore, water discharge could cause erosion. Wind erosion hazard is moderate. Alkalinity is moderate to moderately strong and thus presents reclamation problems.	0.28 mi	Sec. 35, T19N, R99W
Horsley-Youjay-rock outcrop: Hazard of water erosion is severe; therefore, water discharge could cause erosion. The hazard of soil blowing is moderate. Strong alkalinity also makes reclamation difficult in these soils.	.04 mi	Sec. 12, T22N, R100W
Horsley-Huguston-rock outcrop: Water erosion hazard is moderate to severe; therefore, water discharge could cause erosion. Wind erosion hazard is moderate.	0.37 mi	Sec. 9, 22, 27, T19N, R99W
Kandaly-Huguston-Teagulf complex: Water erosion hazard is low. Wind erosion hazard is severe and therefore surface disturbance creates erosion problems.	0.4 mi	Sec. 3 & 34, T22N, R99W
Cotopaxi fine sands: Water erosion hazard is slight to moderate. Wind erosion hazard is very severe; therefore, surface disturbance creates severe erosion problems.	1.9 mi	Sec. 22 & 27, T23N, R100W

The proposed pipeline would be constructed across approximately 1.9 miles of Cotopaxi soils, 0.71 miles of Dines silt loam and 0.40 miles of Kandaly-Huguston-Teagulf complex soils, which contain dune-like sandy soils and are highly susceptible to wind erosion when disturbed.

While these sensitive soils would be avoided where possible during construction, some sandy and erosive soils would be disturbed. Most construction-phase soil impacts would occur due to increased soil exposure during vegetation stripping,

topsoil salvage and stockpiling, and cut-and-fill operations. Exposed or stockpiled soils would be subjected to accelerated erosion due to higher runoff rates, lower infiltration rates, and greater exposure to wind. Soil compaction could also occur due to equipment traffic and could result in reduced soil productivity due to loss of soil structure, increased erodibility, and decreased infiltration and water storage capacity. Linear features such as the proposed pipeline have augmented erosion impacts due to the large amount of edge between disturbed and undisturbed areas. Project area soils could be further affected by increased erosion and rutting if construction occurs when soils are saturated. The primary issue with increased erosion is its resulting potential for increased sediment yield to drainages, and increased turbidity and salinity within these drainages. These potential watershed impacts are further discussed in Section 4.3.1.

In addition to presenting increased sediment sources, sandy soils are difficult to reclaim. As continual erosion can prevent vegetation establishment, revegetation of sandy soils can prove problematic and can reduce reclamation success. The potential for reclamation success is further reduced on alkaline soils such as those contained in the Boltus-Horsley loam complex and in the Horsley-Youjajay-rock outcrop soils, both of which are found along small segments of the proposed pipeline route.

However, because of Applicant Proposed Environmental Protection Measures outlined in Section 2.1.11.6, impacts to sandy and otherwise soils would be avoided or minimized. These measures are summarized again in Section 4.2.3 below.

4.2.2 No Action

Under the No Action Alternative, sensitive soils within the project area would not be affected.

4.2.3 Mitigation / Monitoring

Anadarko would remove the top 6 inches of topsoil along the ROW, separate and conserve the topsoil during excavation, and reuse the topsoil as cover on disturbed areas to facilitate regrowth of vegetation. During stockpiling, topsoil would be protected as determined necessary by the BLM using mulch, netting or other appropriate means.

No construction would occur when soils are saturated. Soils would be considered saturated when ruts form three inches deep or greater.

Water bars would be placed approximately every 25 feet (or as often as necessary) on steep slopes to prevent erosion. Water bars and other erosion prevention measures would also be applied in Sections 9, 22, 27, and 35, T19N,

R99W and Section 12, T22N, R100W where soil types present water erosion hazards.

Anadarko would minimize construction in areas of steep slope (i.e., >25%) and sand dunes and would apply special slope-stabilizing techniques (e.g., mulch, netting, soil stabilizers) if construction cannot be avoided in these areas.

During the reclamation process, the surface of the ROW would be left as rough and uneven as feasible to blend with the surrounding environment and facilitate seed establishment and reclamation.

All drainage crossings would be designed to carry out at least a 10-year/24-hour storm event in accordance with Section 9113 of the BLM Manual.

Anadarko would restrict off-road vehicle activity by employees and contractors.

Anadarko would implement a SWPPP for all construction activities on the ROW. This SWPPP would be filed with the WYDEQ. As part of this plan a list of Best Management Practices (BMPs) would be identified that would help to control erosion and sedimentation. These BMPs could include but not be limited to water breaks, sand bag berms, retention basins, hay bale dikes, and silt fences. These BMPs would be left in place and maintained until the ROW has attained 80 percent of predisturbance vegetation.

No mitigation or monitoring is proposed for the No Action Alternative.

4.3 SURFACE WATER AND WETLANDS

4.3.1 Proposed Action

Potential impacts to surface water quality from the Proposed Action include increased turbidity, salinity and sedimentation of the surface waters described in Table 3-4 due to runoff and erosion from disturbed areas. Soil disturbance resulting from the construction of the pipeline access roads and the associated increases in sedimentation and salinity could result in the loss of Proper Functioning Condition (PFC) of drainages within the project area. If erosion and sedimentation is not prevented or minimized, conditions could worsen along drainages that are already classified as Functioning At Risk (FAR) such as Bitter Creek. Accidental leaks from the pipeline also could impact surface water quality. If equipment is operated when soils are saturated, there is an increased risk of the equipment causing ruts to form. Depending on where ruts occur, rills and gullies could form and lead to increased erosional activities and corresponding, but unquantifiable increases in sediment yield to project area drainages. If these potential effects are not prevented, the Proposed Action could adversely affect surface water within the project area. However, based on Applicant Proposed Environmental Protection Measures discussed in Section

2.1.11.6, 2.1.11.7 and 4.2.3 (e.g., commitment to erosion protection measures, limitation of construction when muddy), the Proposed Action is not likely to adversely affect watershed resources.

Wetland crossings would be constructed in such a way as to allow the wetland/riparian area to continue to function. For all wetlands that the proposed pipeline would trench across, Nationwide #12 permits would be completed as required. Additional Section 404 permitting would also occur as required by the U.S. Army Corp of Engineers. Based on these measures, wetlands are not likely to be adversely affected by the Proposed Action.

4.3.2 No Action Alternative

As the project area would not be disturbed under the No Action Alternative, soil losses and sediment yield would continue at background rates. Other ongoing energy related activities, off-highway vehicle (OHV) use, and livestock grazing could result in increased sediment yield to project area drainages.

As the proposed pipeline would not be constructed under the No Action Alternative, wetlands along the pipeline corridor would not be affected.

4.3.3 Mitigation / Monitoring

See Applicant Proposed Environmental Protection Measures in Section 2.1.11.6 for Proposed Action.

No mitigation or monitoring is required for the No Action Alternative.

4.4 VEGETATION RESOURCES

4.4.1 Proposed Action

4.4.1.1 General Vegetation

The proposed project would temporarily disturb approximately 222.35 acres of common upland vegetation types. Disturbance would consist of either direct removal of vegetation from blading, grading, and trenching of the pipeline ROW, or superficial damage from vehicles and foot traffic on the ROW. In the arid precipitation zone of the project area, it could take 2 to 3 years for the project area to be successfully reclaimed by herbaceous species (i.e., grasses and forbs). The shrub component on newly disturbed areas may require more than 20 years to recover to pre-disturbance levels after reseeding and reclamation activities begin.

4.4.1.2 Special Status Plant Species

Nelson's milkvetch

The Proposed Action has the potential to disturb populations of Nelson's milkvetch. Construction of the pipeline or vehicle traffic within sagebrush habitats has the potential to directly impact flowering or fruiting plants. However, based on Applicant Proposed Environmental Protection Measures in Section 2.1.11.3 (which commit to surveys for the species should the BLM determine it necessary), the Proposed Action is not likely to adversely affect Nelson's milkvetch.

4.4.1.3 Noxious and Invasive Weeds

Construction vehicles and storage of pipeline equipment have the potential to introduce noxious and invasive weeds into the project area. Specific negative effects of noxious and invasive weeds can include 1) reduction in the overall visual character of an area; 2) competition with, or complete over-running of, native plants; 3) reduction or fragmentation of wildlife habitats; and 4) increased soil erosion. Because of these potential impacts, the threat of noxious and invasive weeds in the Monell CO₂ pipeline project area is a concern. However, due to the Applicant Proposed Environmental Protection Measures discussed in Section 2.1.11.4, the potential for the introduction and spread of noxious and invasive weeds due to project activities would be minimized. Based on these weed prevention and control measures, the project area is not likely to be adversely affected by noxious and invasive weeds.

4.4.2 No Action

4.4.2.1 General Vegetation

Under the No Action Alternative, the approximately 222.35 acres of temporary vegetation disturbance under discussion would remain undisturbed by Proposed Action activities. Other ongoing energy related activities, OHV use, and livestock grazing would result in vegetation loss and the potential spread of noxious weeds.

4.4.2.2 Special Status Plant Species

Nelson's milkvetch

Under the No Action Alternative, pipeline construction would not occur; therefore, suitable habitat for Nelson's milkvetch would not be affected.

4.4.3 Mitigation / Monitoring

See Applicant Proposed Environmental Protection Measures in Section 2.1.11.3 and 2.1.11.4 for the Proposed Action.

No mitigation or monitoring for the No Action Alternative.

4.5 WILDLIFE RESOURCES

4.5.1 Proposed Action

4.5.1.1 General Wildlife

Approximately 222.35 acres of wildlife habitat would be temporarily disturbed during pipeline construction. Depending on moisture conditions, herbaceous species may require 2 to 3 years to reclaim disturbed areas successfully. The sagebrush component on newly disturbed areas may require more than 20 years to recover to pre-disturbance levels after reseeding and reclamation activities begin. Given overall habitat availability within the greater project region for non-listed, non-game wildlife species, this temporary loss of the shrub community is not anticipated to reduce wildlife populations. An increase in herbaceous species prior to shrub establishment would also improve forage availability for big game and livestock within the project area.

The Proposed Action would result in temporary increased human presence and use of the area. Since the proposed project is within an existing oil and gas field, there is already an on-going level of human activity within the project area. This activity is associated with existing well production, maintenance operations, and previously permitted well, pipeline and access road construction. The proposed project would result in an incremental increase in human activities in the project area during the four month season of construction, which could negatively influence the movement of animals with large home ranges (e.g., mammalian predators) or animals that migrate through or use the project area seasonally (e.g., mule deer and raptors).

Although no records are kept on wildlife-vehicle collisions within the greater project area, they have the potential to occur on existing access roads. Increased traffic on these roads during the construction phase of the Proposed Action could result in an increase in the rate of vehicle-induced wildlife mortality.

4.5.1.2 Big Game

The Proposed Action would disturb an estimated 222.35 acres of yearlong pronghorn antelope habitat, approximately 12 acres falling within crucial winter pronghorn antelope range. As described in Section 4.4.1, disturbance would consist of either direct removal of vegetation from blading, grading, and trenching of the ROW or superficial damage from vehicles and foot traffic on the ROW. However, these losses are not likely to have adverse population-level effects on pronghorn antelope for the following reasons: 1) because of the relative size of the Bitter Creek and Red Desert herds; 2) the herds' ability to habituate to human

activity; 3) the amount of existing disturbance within the project area; 4) the amount of suitable habitat available in the surrounding region; and 5) reclamation of the area with herbaceous species prior to shrub establishment would temporarily improve forage availability for pronghorn antelope.

As neither crucial winter range nor fawning/calving habitats for mule deer or elk are found in the project area (BLM 1999), construction of the pipeline would not affect winter or calving/breeding habitats. Reclamation of the ROW by herbaceous species prior to shrub establishment would temporarily improve forage availability for elk and mule deer.

4.5.1.3 Feral Horses

The primary concern associated with feral horses and the Proposed Action is related to potential injury or fatality from project-related activities. Feral horses gather frequently at the 12-Mile water well in Section 28, T22N, R99W. Open pipeline trenches near this well, or along horse routes to the well, have the potential to result in horse injury. Increased traffic on access roads within the project area during the construction phase also increases the potential for vehicle-horse collisions. In order to reduce the potential for these occurrences, Anadarko has committed to minimizing the length of open trenching to no more than one mile at a time.

4.5.1.4 Raptors

As discussed in Section 3.7.5, four raptor nests are located within a one-mile radius of the project area; three ferruginous hawk nests and one burrowing owl nest site. Potential effects on these species are discussed in Section 4.5.1.5. No other raptor nests have been documented within a one-mile radius of the project area. As such, the Proposed Action is not likely to directly affect nesting raptors other than the ferruginous hawk and burrowing owl.

Indirect effects on resident and migratory raptor species would include an incremental habitat loss associated with changes in vegetation structure from project development. These habitat losses would in turn result in a reduction of raptor prey base species (e.g., prairie dogs, rabbits, mice, small birds) from increased habitat fragmentation caused by pipeline construction. The incremental loss of some prey species may limit raptor foraging opportunities; however, this prey reduction is not likely to cause a decrease in raptor populations. This conclusion is based on the habitat types that would be affected by the project, the short-term nature of the wildlife habitat disturbance, and the extent of the vegetation communities.

4.5.1.5 Special Status Wildlife Species

Bald Eagle

Nesting habitat of the bald eagle does not occur within the project area and therefore, would not be affected by implementation of the Proposed Action. Wintering eagles have the potential to forage in the project area from early November through late March. As bald eagles are sensitive to human activity, they are likely to avoid areas where pipeline construction activities are taking place. This effect would result in a temporary reduction of foraging habitat for bald eagles.

If the pipeline is installed during winter months when bald eagle use of the area occurs, the potential for roadway mortality of bald eagles could also increase during the four months of pipeline construction as carrion is one of the species' primary winter food sources.

Mountain Plover

As previously cited, the Proposed Action would temporarily disturb 1.7 acres of prairie dog colony habitat that falls within the proposed pipeline route. Disturbance would consist of the removal or trampling of soil and vegetation along the pipeline ROW, as well behavioral impacts potentially caused by the presence of vehicle and equipment traffic within the prairie dog colonies. As mountain plovers have the potential to occur within these prairie dog colonies, trenching activity and vehicle/equipment traffic during the plover breeding season has the potential to disturb the species. In order to avoid any impact on mountain plovers, Anadarko has committed to the Applicant Proposed Environmental Protection Measures outline in Section 2.1.11.5. This measure commits to funding mountain plover surveys if construction within prairie dog colonies is to begin or continue between April 10 and July 10. Should nesting plovers be documented within 1/4 mile of the pipeline, construction within 1/4 mile of the nest should be halted until after July 10. Based on this protective measure, mountain plovers are not likely to be adversely affected by the Proposed Action.

Western Burrowing Owl

Under the Proposed Action, an estimated 1.7 acres of active prairie dog habitat would be disturbed by the construction of the pipeline. If the pipeline is constructed during the burrowing owl's nesting season (February 1 - July 31), the primary threats of the proposed project to burrowing owls would be loss of nesting habitat and direct mortality due to ground-disturbing activity. However, as summarized in the Applicant Proposed Environmental Protection Measures outline in Section 2.1.11.5, if construction is proposed during the burrowing owl's nesting and fledging season, surveys for the species would be conducted by a BLM-approved wildlife biologist in all prairie dog habitat proposed for disturbance. Should nesting burrowing owls be documented within the project area, construction would be avoided within a 1/2-mile radius of the nest site

during the active nesting and fledging season. Based on this commitment, western burrowing owls are not likely to be adversely affected by the Proposed Action.

Ferruginous Hawk

If pipeline construction activity begins or continues between February 1 and July 31 the three ferruginous hawk nest sites described in Sections 3.7.5 and 3.7.6 could be directly affected. Direct effects from project activities could include visual and noise disturbance that could result in nest abandonment and/or reproductive failure. Indirect and cumulative effects would be similar to those discussed in Section 4.5.1.9 under raptors. However, as summarized in the Applicant Proposed Environmental Protection Measures outline in Section 2.1.11.5, if construction is proposed during the ferruginous hawk's nesting and fledging season, surveys of the three nests would be conducted by a BLM-approved wildlife biologist. If any of the three nests are documented as active, construction would be avoided within a one-mile radius of the nest site from February 1 through July 31. Based on this commitment, the ferruginous hawk is not likely to be adversely affected by the Proposed Action.

Greater Sage-Grouse

The proposed project would temporarily disturb approximately 222.35 acres of upland vegetation. As shrubs require as much as 10 to 20 years to be reclaimed to pre-disturbance conditions, any removal of sagebrush would reduce wintering habitat and potential breeding, nesting or brooding habitat for the Greater Sage-Grouse. However, given the small-scale of the project area, the extent of sagebrush habitats within the surrounding region, and the limited occupancy of the pipeline corridor and two-mile buffer zone of sage-grouse leks and brooding habitat, this potential reduction in sagebrush habitat is not likely to adversely affect the species.

Because there's a known lek within two-miles of the proposed pipeline, the Proposed Action has the potential to affect breeding, nesting and brooding activities. Should project construction begin or continue into the species' breeding season (March 1 through June 15), a lek survey would be conducted prior to allowing construction within two miles of the lek in Section 15, T18N, R99W. If the lek is active, construction would be avoided between 6:00 pm and 9:00 am within 1/2 mile of the lek from March 1 to June 30. Construction would also be limited within a two-mile radius of the active lek in order to protect nesting and brooding habitat. As cited in the Green River RMP, the actual area to be avoided and appropriate time frame would be determined on a case-by-case basis. Based on these Applicant Proposed Environmental Protection Measures, the Proposed Action is not likely to adversely affect the Greater Sage-Grouse.

Sage Sparrow

While the proposed project will disturb potential habitat for the sage sparrow, based the extent of sagebrush habitat throughout the analysis area, and the

relatively abundant distribution of the sage sparrow in Wyoming, this impact is not likely to adversely affect the species.

4.5.2 No Action

4.5.2.1 General Wildlife

Under the No Action Alternative, oil and gas development and livestock grazing activities would remain the predominant land uses and the only uses causing important change within the project area. Environmental consequences to wildlife and sensitive animal species from previously approved drilling and production would persist. Big game and raptors are relatively sensitive to human disturbance, and some animals would be displaced from cover, forage, and nest sites. The effect on population levels would vary depending on the species; however, in general, most populations of species that occur in the area are assumed to be stable and the No Action Alternative would not result in population declines.

4.5.2.2 Big Game

Implementation of the No Action Alternative would not result in any incremental loss of crucial pronghorn antelope habitat or year-long habitat for pronghorn antelope, mule deer or elk. Under this alternative, vegetation that would be disturbed under the Proposed Action would remain available for pronghorn antelope, mule deer and elk use. Under the No Action Alternative, no behavioral effects on big game would be expected, assuming that animals currently using the project area have habituated to human presence attributed to ongoing natural gas production, livestock grazing and other activities.

4.5.2.3 Feral Horses

As the proposed pipeline trench would not be constructed and traffic levels would not increase on project area access roads, feral horses would not be affected by the No Action Alternative.

4.5.2.4 Raptors

Under the No Action Alternative, human presence within the project area would continue at or near current levels. Ongoing oil and gas activities would disturb some raptors and nesting birds and could disrupt foraging, resting, and reproductive activities; however, this prey reduction is not likely to cause a decrease in raptor populations. Existing oil and gas production facilities could continue to limit future raptor nest site selection.

4.5.2.5 Special Status Wildlife Species

Bald Eagle

Under the No Action Alternative, human presence within the project area would continue at or near current levels. Existing oil and gas production facilities could continue to limit winter foraging use of the project area.

Mountain Plover

As the pipeline would not be constructed, prairie dog habitat would not be affected by trenching and vehicle traffic. Therefore, mountain plovers that could potentially use this habitat for breeding and nesting sites would not be affected by the No Action Alternative.

Western Burrowing Owl

As the proposed pipeline would not be constructed, prairie dog habitat would not be affected by trenching and vehicle traffic. Therefore, burrowing owls that could potentially use this habitat for breeding and nesting sites would not be affected by the No Action Alternative. Similarly, the known nest site in Section 9, T19N, R99W, would not be affected by pipeline construction activities.

Ferruginous Hawk

Under the No Action Alternative, human presence within the project area would continue at or near current levels. Ongoing oil and gas activities would have the potential to disturb ferruginous hawks nesting and foraging in the area. Existing oil and gas production facilities could continue to limit future ferruginous hawk nest site selection.

Sage-Grouse

As the proposed pipeline would not be constructed, the noise and vegetation disturbance associated with pipeline activities would not occur. Therefore, the sage-grouse lek in Section 15, T18N, R99W and surrounding nesting and brooding habitats would not be affected by the No Action Alternative.

Sage Sparrow

As the proposed pipeline would not be constructed, the vegetation disturbance associated with pipeline activities would not occur. Therefore, the sage sparrow would not be affected by the No Action Alternative.

4.5.3 Mitigation / Monitoring

See Applicant Proposed Environmental Protection Measures in Section 2.1.11.5 for Proposed Action.

No mitigation or monitoring for the No Action Alternative.

4.6 UNAVOIDABLE ADVERSE IMPACTS

The Applicant Proposed Environmental Protection Measures incorporated into the Proposed Action and Mitigation Measures discussed in Chapter 4.0 would avoid or minimize many of the potential adverse effects of the project; however, not all adverse effects can be completely avoided, nor is mitigation 100% effective in remediating all impacts. There would be at least a minimal amount of unavoidable effects on all resources in the project area for at least a short time, due to the presence of equipment and humans in the area and the time necessary for mitigation to be effective (e.g., reclamation).

4.6.1 Proposed Action

Unavoidable adverse effects of the Proposed Action would include the following:

- 1) Sediment yield in areas excavated for pipeline installation would increase until vegetation reestablishment stabilized project area soils.
- 2) Short-term increases in construction-related fugitive dust emissions could occur from vehicles and equipment during the construction phase.

4.6.2 No Action

No unavoidable adverse impacts would be expected.

4.7 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

For the purposes of this discussion, short-term use of the environment is defined as use of the environment during construction of the project. Long-term use of the environment refers to the 30-year life of the project and the additional years required to reclaim disturbed areas. The short-term use of the environment would affect those resources discussed in Sections 4.1 through 4.5. After the project is completed and disturbed areas reclaimed, the same resources that were present prior to the project would be available, except for the oil removed as a result of the pipeline. It may take 20 years or more after the life of the project for some of the shrub vegetation to revegetate to conditions similar to those present prior to disturbance.

4.8 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible commitment is one that cannot be reversed, except perhaps in the extreme long term. The classic example of an irreversible commitment is when a species goes extinct (The Shipley Group 2001). Irretrievable commitments are those that are lost for a period of time. For example, if a grazing allotment is in

poor condition and is likely to remain so, the gap between the current condition of the habitat and the return to its “original” or its ideal condition is an ongoing irretrievable loss (The Shipley Group 2001).

4.8.1 Proposed Action

Inadvertent or accidental destruction of paleontological or cultural resources during pipeline construction would be an irretrievable loss.

Wildlife inadvertently or accidentally killed during earthmoving activities or through collisions with vehicles would be irreversibly and irretrievably lost.

There would be an irreversible and irretrievable commitment of the energy and some materials used during pipeline construction associated with the project. Pipeline material would be permanent and would be abandoned in place. It would not be recovered due to practical or economic considerations, so it would be irreversibly and irretrievably committed.

4.8.2 No Action Alternative

No irretrievable or irreversible impacts are anticipated.

5.0 REASONABLY FORESEEABLE DEVELOPMENT AND CUMULATIVE IMPACTS

5.1 INTRODUCTION

Federal regulations, 40 Code of Federal Regulations (CFR) 1508.7, define cumulative impacts as:

"...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non_Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

The proposed project incorporates measures intended to reduce, minimize, or avoid adverse effects on the human environment. These measures are summarized under Applicant Proposed Environmental Protection Measures in Section 2.1.11 and Chapter 4.0 (Environmental Consequences) for both the Proposed Action and No Action Alternative.

As summarized in Section 4.6 (Unavoidable Adverse Impacts), implementation of the Proposed Action would be expected to have certain effects that could not be completely mitigated. In addition, other past, present, and foreseeable future projects may have residual effects as well, despite implementation of environmental protection and mitigation measures discussed in this document and other oil and gas environmental analyses. This chapter identifies cumulative impacts as the incremental effect to specific resource areas that would occur from implementation of the Proposed Action in conjunction with impacts from other past, ongoing, recently approved, and reasonably foreseeable future actions, and considers these impacts in the context of ecosystem management in the immediate project area and the surrounding CD/WII EIS area.

While much of the following discussion focuses on cumulative adverse impacts of future oil and gas development, it should be noted that beneficial cumulative effects also would occur. For example, though CO₂ is considered a common, ordinary compound usually in a gaseous state, increased CO₂ concentrations in the atmosphere are theorized to be a contributor to the greenhouse effect. There is some concern that over time, massive increases in CO₂ emissions may potentially lead to global warming. Anadarko's proposal would transport large quantities of CO₂, currently being vented to the atmosphere, from an existing facility to the existing Monell Field and sequester it underground to stimulate additional oil production from the field. The proposal also minimizes new surface disturbance by shadowing the corridor of an existing pipeline ROW for 15 miles (a length representing almost 45 percent of the total pipeline ROW). Beneficial cumulative effects would also include increased government royalties

and revenues derived from oil and gas production, additional employment opportunities in the region, and decreased reliance upon foreign sources of energy as domestic supplies are developed.

5.2 REASONABLY FORESEEABLE DEVELOPMENT

The proposed pipeline falls partially within the CD/WII EIS area. This EA incorporates key projects for ongoing, proposed, and potential exploration and production actions within the project area and the CD/WII EIS area, defined as the Cumulative Impact Analysis Area (CIAA). Reasonably Foreseeable Development (RFD) projections are based on current knowledge of energy prices, geology, drilling technology, and reservoir management. In practice, however, this knowledge will change over time. For example, currently unknown geologic or reservoir conditions, changes in energy prices and other economic factors could cause far fewer wells to be drilled within the CIAA. It is also important to note that the RFD projections are made only for the purpose of projecting future cumulative impacts. RFD items are assumptions for analysis and are not part of the proposed project. Inclusion in the RFD scenario does not constitute a decision nor a commitment of resources. If a future action requires NEPA compliance, inclusion in this cumulative impact scenario would not satisfy that requirement.

Oil and gas development is one of a few major resource development activities within the CIAA. Development is continuing at record or near record levels. The Proposed Action includes the construction of 32.7 miles of pipeline. The CD/WII Record of Decision approved the construction of 2,130 miles of pipeline.

5.3 CUMULATIVE IMPACTS

Oil and gas development is, has been, and will likely continue to be a prominent use of the CIAA. Most of the surface disturbance and increased human activity levels are associated with oil and gas development. Cumulative effects to natural resources added incrementally by the proposed project would occur if potential impacts are not avoided or mitigated.

5.3.1 Proposed Action

As the proposed project area would be completely reclaimed following pipeline construction, long-term, incremental cumulative impacts to most resources are not expected. The primary issues for the cumulative impact analysis related to Anadarko's Proposed Project are soils, vegetation, and wildlife.

5.3.1.1 Soils and Vegetation

Any land disturbing activity which removes native vegetation and topsoil adversely affects vegetation and soil functions. Based on RFD projections,

sediment yield within the CIAA is likely to increase above background rates due to the disturbance associated with oil and gas activities in the region. Of these soil disturbing activities, existing and proposed roads are the issues of highest concern as they are the primary contributors of high sediment yield. Unlike buried pipelines, active roadways are not fully reclaimed and thus, sediment yield within roads can continue at rates two to three times above background rates into the indefinite future. The proposed pipeline would disturb a relatively small area (approximately 219 ac) of surface soils, and assuming no additional disturbances, would only increase sediment yield rates for a short-term period (2 to 3 years) until vegetation establishment stabilizes soils within the disturbed ROW. However, any increase in background sediment yield levels, small-scale or short term, must be addressed as adding to cumulative levels. This same discussion must also be applied to vegetation loss. As described in Section 3.3 of this EA, the temporary loss of 222.35 acres of upland vegetation types is rather minimal. Yet in the context of cumulative impact analyses, each acre of vegetation disturbance adds to a cumulative effect by increasing erosion, incrementally adding to overall native vegetation loss, and potentially increasing invasion of undesired plant species.

5.3.1.2 Wildlife Resources

Ongoing and planned oil and gas activities within the CIAA, would further reduce the amount of available cover, foraging opportunities, and breeding areas for a wide variety of wildlife trophic levels. Oil and gas production and transportation activities would incrementally reduce the productivity of the wildlife habitats affected and increase the amount of human presence and use of the region for, at a minimum, the lives of these RFD projects. Additional development could preclude animals from using areas of more intensive human activity. In general, the severity of the cumulative effects would depend on factors such as the sensitivity of the species impacted, seasonal intensity of use, type of project activity, and physical parameters (e.g., topography, forage, and cover availability). As with soils and vegetation resources, the implementation of the Proposed Action is not likely to have major adverse effects on wildlife populations. However, the 222.35 acres proposed for disturbance incrementally adds to wildlife habitat losses within the CIAA.

5.3.2 No Action

None.

6.0 LIST OF PREPARERS AND REVIEWERS, AND CONSULTATION AND COORDINATION

The following individuals were involved in the preparation or review of the document.

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Air Quality Analyses, Technical Review

GIS

Chapters 1 and 2, Technical Review, Vegetation and Soils Analyses, Wildlife

Technical Review

Cultural Resources

Bureau of Land Management, Rock Springs Field Office

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7.0 PUBLIC INTEREST

Overall, it is assumed that there will be relatively little public concern and controversy over implementation of either the Proposed Action or No Action Alternative. Several factors were considered to determine the likely level of public interest in this EA. These factors are summarized below:

1. The project area lies within an area that exhibits oil and gas development.
2. Approximately 45% of the proposed pipeline corridor shadows an existing pipeline corridor.
3. The EA responds to all issues and comments received on the public scoping statement.
4. The Proposed Action incorporates numerous Applicant Proposed Environmental Protection Measures designed to avoid or minimize negative effects on the human environment.
5. The alternatives will result in the long-term (30 year life of the project) disturbance of approximately 2.21 acres of common upland vegetation types.
6. The alternatives would not adversely affect any Threatened, Endangered, or otherwise sensitive plant or wildlife species.
7. The alternatives would not adversely affect cultural or paleontological resources.
8. The alternatives would not adversely affect air or water quality.
9. The project area competes with few other land use issues. Recreational use would continue upon implementation of either alternative. Livestock grazing would continue upon implementation of either alternative.
10. The project area does not fall within any areas of high environmental sensitivity or scenic value. As summarized in Table 3.1, there are no wilderness areas, ACECs, or scenic or wild rivers within the proposed project location.

Given the above reasons, it is assumed that the intensity of public interest in the proposed project will be relatively low.

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APPENDIX A
MONELL CO₂ PIPELINE SCOPING NOTICE AND RECIPIENTS

**SCOPING NOTICE
RME PETROLEUM COMPANY
MONELL CO₂ PIPELINE PROJECT**

**Bureau of Land Management
Rock Springs Field Office**

Description of Proposed Project

RME Petroleum Company (RME), a subsidiary of Anadarko Petroleum Corporation (APC), is proposing to construct, operate, and maintain a buried carbon dioxide (CO₂) gas pipeline and related facilities to transport CO₂ gas from an existing valve terminal at the Exxon/Mobil Shute Creek CO₂ distribution pipeline system located in NW1/4 of Section 15, T. 23 N., R 100 W, 6th Principal Meridian (P.M.), Sweetwater County, Wyoming south-southeast to the existing RME Monell Federal Unit oil field located in SE 1/4 of Section 11, T. 18 N., R. 99 W., 6th P.M. The pipeline would be approximately 32.7 miles in length and constructed with 6 and 8 inch outside diameter pipe (see Map). Approximately 14.6 miles of the pipeline route would follow the existing Duke Energy Field Services' Bravo pipeline. The pipeline route is located within the checkerboard landownership pattern (every other section is owned by either private or state entities).

Related facilities include metering equipment, a booster station, and cathodic protection beds. RME proposes to construct a metering station within the proposed right-of-way (ROW) at the existing valve terminal at the Exxon/Mobil CO₂ pipeline. A booster pump station is proposed in SW1/4SW1/4 of Section 35, T. 19 N., R. 99 W., 6th P.M. and would occupy approximately 3.67 acres within the Monell Unit boundary. Electric motors would drive the pumps. One 300 horsepower (HP) pump would boost pressure of the CO₂ gas for injection. As demand for the CO₂ gas increases, 4 additional pumps could be required. Each pump would be powered by a 300 HP, 4160 volt, 3 phase, 60 cycle, 3600 RMP electric motor. Electrical power is currently available at the proposed site. Primary cathodic protection beds would be located at the booster pump station. A second set of cathodic protection beds could be located north of the booster pump station depending upon the results of a soil study.

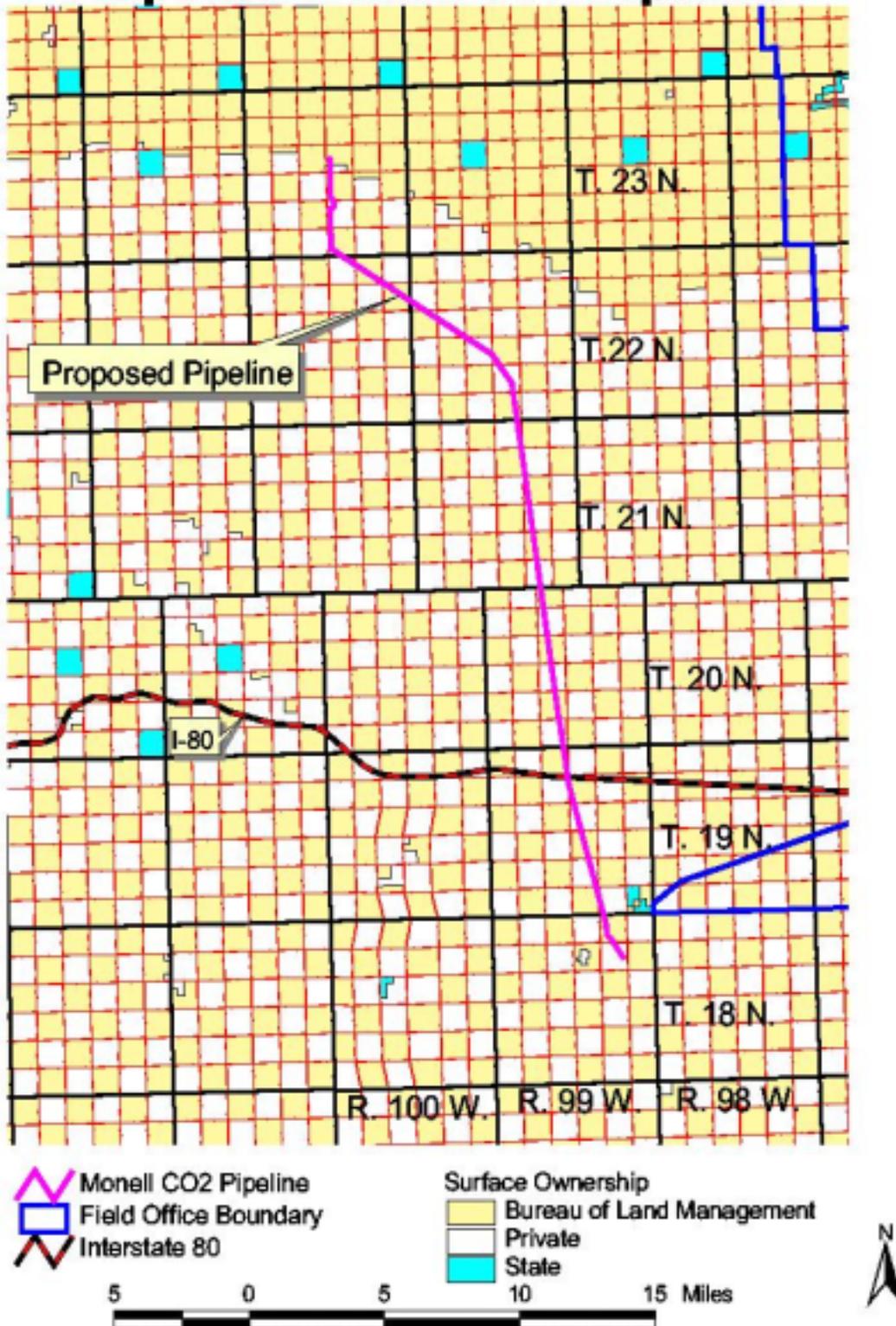
Relationship to Existing Plans and Documents

Green River Resource Management Plan. - The proposed Monell CO₂ pipeline is in conformance with the Green River Resource Management Plan (GRRMP) approved August 8, 1997. The GRRMP states that public lands will be made available for rights-of-way. The environmental analysis completed for this project will incorporate appropriate decisions, terms, and conditions of use as described in the GRRMP.

Continental Divide/Wamsutter II Natural Gas Project EIS – The pipeline route falls within a portion of the area covered in the analysis for the Continental Divide/Wamsutter II Natural Gas Project. This analysis may tier to the document if relevant.

Use Authorizations. Use authorizations for the Monell CO₂ Pipeline would be processed through the BLM right-of-way process under the authority of the Mineral Leasing Act, as amended.

Proposed Monell CO2 Pipeline



National Environmental Policy Act (NEPA)

The proposed project is subject to the appropriate level of environmental analysis. To comply with NEPA and the Council on Environmental Quality regulations that implement NEPA, the BLM is required to conduct an environmental analysis. The environmental document will serve several purposes. It will provide the public and government agencies with information about the potential environmental consequences of the project and alternatives; it will allow the public and various agency officials to evaluate the significance of the potential environmental consequences of the project and alternatives; it will provide the opportunity to evaluate all practical means to avoid or minimize environmental harm from the project and alternatives; and it will provide the responsible officials with information upon which to make an informed decision regarding the project.

One element of the NEPA process is scoping. Scoping is initiated early in the process to: Identify reasonable alternative measures to be evaluated in the environmental document; Identify environmental issues of concern related to the proposed project; and Determine the depth of analysis for issues addressed in the environmental document.

This scoping notice has been prepared to enable government agencies, the general public, and other interested parties to participate in and contribute to the analysis process. Public input is important in establishing the scope of analysis for any NEPA document and the BLM encourages public participation.

Identified Resource Management Issues, Concerns, and Opportunities

The following tentative issues and concerns have been identified by an interdisciplinary team and include the following resource issues:

Potential impacts to wildlife populations and habitats within the analysis area including big game crucial winter range and raptor nesting habitat;
Potential impacts to sensitive soils within the project area;
Class III visual resource management area;
Potential impacts to cultural and historical values;
Potential impacts to listed, proposed for listing, or candidate plant and animal species;
Potential opportunity to reduce carbon dioxide emissions from the Exxon Mobil Shute Creek plant and put previously vented emissions to beneficial use;
Potential opportunity to increase local, county, state, and federal revenues due to increased oil recovery; and
Cumulative effects of the proposed project when combined with other ongoing and proposed developments on lands within the BLM Rock Springs Field Office area.

Public Participation

Public input is important in establishing the level and scope of the analysis. The public is encouraged to participate during environmental analysis process to help in identifying the level of analysis needed, the alternatives to the proposed action, the other issues or concerns that should be analyzed, mitigative opportunities, and any other comments or ideas to help ensure the completeness of the analysis process.

Comments, including names and street addresses of respondents will be available for public review at the BLM Rock Springs Field Office and will be subject to disclosure under the Freedom of Information Act (FOIA). They will be published as part of the Environmental Assessment and other related documents. Individuals may request confidentiality. If you wish to withhold your name or street address from public review and disclosure under the FOIA, you must state this prominently at the beginning of your written comment. Such requests will be honored to the

extent allowed by law. All submissions from organizations or businesses will be made available for public inspection in their entirety.

Written comments on the issues and concerns regarding the scope of this proposal will be accepted through August 26, 2002. Comments should be directed to:

Teri Deakins, Project Manager
Bureau of Land Management - Rock Springs Field Office
280 Highway 191 North
Rock Springs, Wyoming 82901
Email: teri_deakins@blm.gov
(Please refer to the *Monell CO₂ Pipeline* in the subject field)

The following agencies, individuals, and organizations received a copy of this scoping statement:

FEDERAL OFFICES

Federal Regulatory Commission – Office of Pipeline & producer Regulations
Office of Environmental Policy and Compliance
U.S. Army Corps of Engineers
U.S. BLM- Wyoming State Office (921, 951, WY-030)
U.S. Department of Energy
U.S. Fish and Wildlife Service
U.S. Natural Resources Conservation Council
U.S. Postmaster – Farson
U.S. Representative Barbara Cubin
U.S. Senator Craig Thomas
U.S. Senator Mike Enzi

STATE AGENCIES

Governor Jim Geringer
Office of Federal Land Policy – State Clearing House for all State Agencies
State Representatives - Fred Parady, Bud Nelson, Stephen Watt, Chris Boswell, Bill Thompson
State Senators – Rae Lynn Job, Mark Harris, Mark Harris, Tex Boggs
University of Wyoming – Collection Development Office
Western Wyoming Community College
Wyoming Assn of Professional Archeologists – Gov. Affairs
Wyoming Association of Municipalities

COUNTY GOVERNMENT AND MUNICIPALITIES

Sweetwater County Commissioners
Sweetwater County School Districts
Sweetwater Planning Commission
Mayors - Green River, Rock Springs, Superior, Wamsutter

NATIVE AMERICAN TRIBES

Eastern Shoshone Tribal Council
Medicine Wheel Coalition for Scared Sites
Northern Arapahoe Tribal Council
Northern Ute Cultural Committee
Shoshone-Bannock Tribes

LOCAL MEDIA

Casper Star-Tribune
Green River Star
KGWC TV - Casper
KMKX - Rock Springs
KQSW/KRKK - Rock Springs
KSIT - Rock Springs
KTWO - Casper
KUGR - Green River
KYCS - Rock Springs
Rock Springs Rocket Miner
Wyoming, NPR - Laramie

RIGHTS-OF-WAY HOLDERS, LANDOWNERS

EPX Company
Overland Trail Tans., LLC
Pacific Power & Light
RME Petroleum Co
Rock Spring Grazing Association
Sweetwater County

OTHER AGENCIES AND INDIVIDUALS

Audubon Society
Fund for Animals
Humane Society of the U.S.
National Wildlife Federation
Natural Resources Defense Council
People for the USA
People for Wyoming
Petroleum Association of Wyoming
Predator Project
Public Lands Advocacy
Rocky Mountain Elk Foundation
Sweetwater Wildlife Association
Sierra Club – National and Northern Rockies Regional Offices
Southwest Wyoming Economic Development Association
Southwest Wyoming Industrial Association
Southwest Wyoming Mineral Association
Southwest Wyoming Mule Deer Foundation
The Nature Conservancy
Wyoming Advocates for Animals
Wyoming Association of Professional Archeologists
Wyoming Business Alliance
Wyoming Department of Transportation – RS Office
Wyoming Farm Bureau Federation
Wyoming Outdoor Council
Wyoming Public Lands Council
Wyoming Public Lands Council
Wyoming Sportsman's AssociationWyoming State Grazing Board
Wyoming Stockgrowers Association
Wyoming Wildlife Federation
Wyoming Woolgrowers Association

**APPENDIX B
MAP OF PRAIRIE DOG HABITATS WITHIN
AND ADJACENT TO PROJECT AREA**

