2.0 Description of the Proposed Action and Alternatives

2.1 Introduction

The Proposed Action analyzed in this EA consists of the construction of the Project from the Lost Cabin Gas Plant to the Bell Creek Field. Construction of the Project would require approximately 3,228.1 acres; an estimated 3,178.3 acres would be reclaimed immediately following construction. Modifications may be required on some of the access roads. Following construction completion, roadways would be returned to preconstruction conditions. **Table 2-1** provides information on land requirements for both the pipeline and temporary work areas, as part of the Proposed Action. All disturbances, with the exception of permanent access roads, pump stations, block and take-off valves, and the measurements facilities, would be reclaimed after construction.

Table 2-1 Acres Disturbed, Removed, and Reclaimed by the Greencore Project

Component/Facility	Acres Disturbed	Acres Removed	Acres Reclaimed[1]
CO_2 Pipeline, 231.1 miles[2]	2,801.2	0.0	2,801.2
Lost Cabin (MP 0.0) – 6.1 acres Future Natrona Hub (MP 39.5) – 10.0 acres Future Interconnect Station (MP 87.2) – 0.4 acre Future Mid Point Pump Station (MP 144.0) – 5.0 acres Launcher/Receiver Facility (MP 200.4) – 0.4 acre Bell Creek Pump Station and Delivery Point (MP 231.1) – 5.0 acres	26.9	26.9	0.0
Block Valves and Take-off Valves, 20 at 0.2 acre[3]	0.0	4.0	0.0
Measurement Facilities with Scraper Traps, 2 at 0.3 acre; Interconnect Station at 0.8 acre	1.4	1.4	0.0
Casper Pipeyard	21.5	0.0	0.0
Upton Pipeyard[4]	14.9	0.0	0.0
Additional Temporary Work Space	377.1	0.0	377.1
Overall Total[4]	**3,228.1**	**32.3**	**3,178.3**

[1] These are acres that would be reclaimed immediately following the Project construction; all areas would be reclaimed after abandonment.

[2] Assumes nominal construction disturbance width of 100 feet: disturbance may be slightly wider on sidehill locations and narrower on flat ground using disturbance minimization techniques. Acreage for ATWS is provided in a separate entry.

[3] Valves would be installed within the permanent ROW; therefore, disturbance is already accounted for within the pipeline disturbance acreage.

[4] Upton pipeyard is located within an industrial area that is 100 percent previously disturbed ground; therefore the acreage was not added to the total.

Construction of the Project would be scheduled to begin upon receipt of BLM's Notice to Proceed (NTP). Construction of the second and third spreads is anticipated to extend from August 1 through December 31, 2011, and would be from MP 64 to MP 178. Construction of the first and fourth spreads is anticipated to extend from August 1 through December 31, 2012. The first spread would be from MP 0 to MP 64, and the fourth spread would be from MP 178 to MP 231.1. Construction is anticipated to take approximately 15 to 20 weeks to complete in each year of construction. This does not account for weather delays, holidays, or seasonal construction restrictions that may occur during this period. The in-service date is anticipated to be December 31, 2012. Additional reclamation activities lasting approximately 4 weeks would

be required after the pipeline has been placed into service. Each spread would require an average of approximately 163 workers. Most of the unskilled laborers (approximately 25 percent of the total work force) would be hired locally. The limited level of local workers is mainly due to demand for coal bed methane and other oil and gas field-related activities. Skilled laborers, such as pipeline welders, would be hired locally or brought in from outside the area, depending on availability.

Transportation to the ROW is expected to be provided by the pipeline contractor from Casper and Gillette with appropriately sized vehicles. Local resident workers from other parts of the Project area would be expected to supply their own transportation to the work site; they would not be expected to report to Casper or Gillette. It is assumed that up to 61 percent of the workers would drive personal vehicles or work vehicles (e.g., welding truck, foreman's pickups) to the work site. There would be an estimated 101 vehicle trips per spread during the morning and afternoon peak hours.

2.2 Proposed Action

2.2.1 Description of Facilities

Greencore proposes to construct approximately 231.1 miles of 20-inch-diameter CO_2 pipeline from a point in Township 38 North (T38N), Range 90 West (R90W), Section 11 at the Lost Cabin Gas Plant to a point in the Bell Creek Field (T8S, R54E, Section 27). The Project would transport CO_2 as a dense-phase fluid to the Bell Creek Field for a future EOR project and, potentially, to other delivery points when markets develop. Major components of the Project include:

- CO_2 pipeline;
- One future interconnect and pump station (Natrona Hub);
- One future interconnect (Interconnect Station);
- One future pump station (Mid Point Pump Station);
- Scraper traps (launcher and receiver vessel installed per USDOT 195 requirements for pigging the pipeline), block valves, Supervisory Control and Data Acquisition (SCADA) control buildings and satellite communications, and takeoff valves;
- Cathodic protection facilities and CO_2 measurement facilities;
- Denbury Lost Cabin CO_2 compression/pump station facilities; and
- Denbury gathering facilities at Bell Creek.

All facilities in this system would be designed, constructed, operated, and maintained in accordance with USDOT Title 49 CFR Part 195, Transportation of Hazardous Liquids by Pipeline, and American National Standards Institute (ANSI) B31.4, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols.

2.2.1.1 CO_2 Pipeline

The Project route would parallel other pipelines, electric power transmission and distribution lines, or roads for approximately 210 miles (91 percent) of the total pipeline length. The Project would traverse private, state, and federal lands. Approximately 66 percent of the route would be on private lands, 5.5 percent on state lands, and 28.5 percent on federal lands. An overview of the Project route is presented in **Figure 1-1**. Maps of the Project route shown at a scale of 1 to 250,000 are provided in **Figure 2-1** (maps 1 through 7).

The CO_2 would be delivered to Bell Creek at a pressure ranging from 1,200 to 2,220 pounds per square inch (psi). The transported gas would be no less than 97 percent CO_2, contain no more than 30 pounds of water per 1,000,000 standard cubic feet (3 percent), and contain no more than 40 ppm (by volume) hydrogen sulfide, and 1,500 ppm carbonyl sulfide (less than 1 percent).

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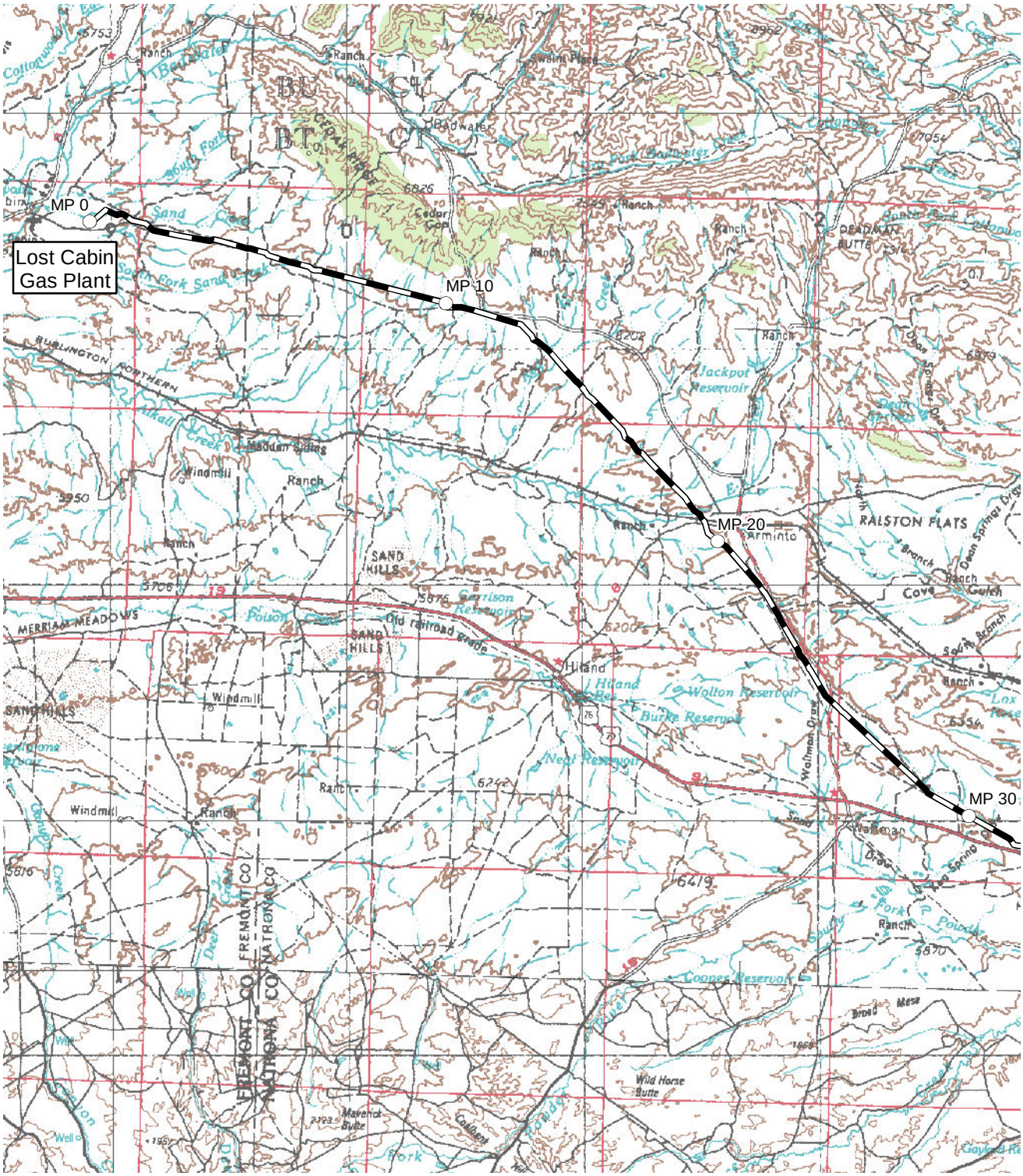
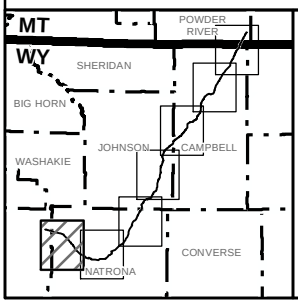




Legend

- Milepost
- Proposed Pipeline Route

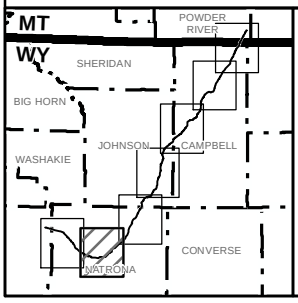
Greencore
CO_2 Pipeline Project

Figure 2-1
Proposed Route

MAP 1 OF 7

0 1 2 4 Miles
0 1 2 4 Kilometers
1:250,000

N



Legend

- Milepost
- Proposed Pipeline Route

Greencore
CO_2 Pipeline Project

Figure 2-1
Proposed Route

MAP 2 OF 7

0 1 2 4 Miles
0 1 2 4 Kilometers
1:250,000

N

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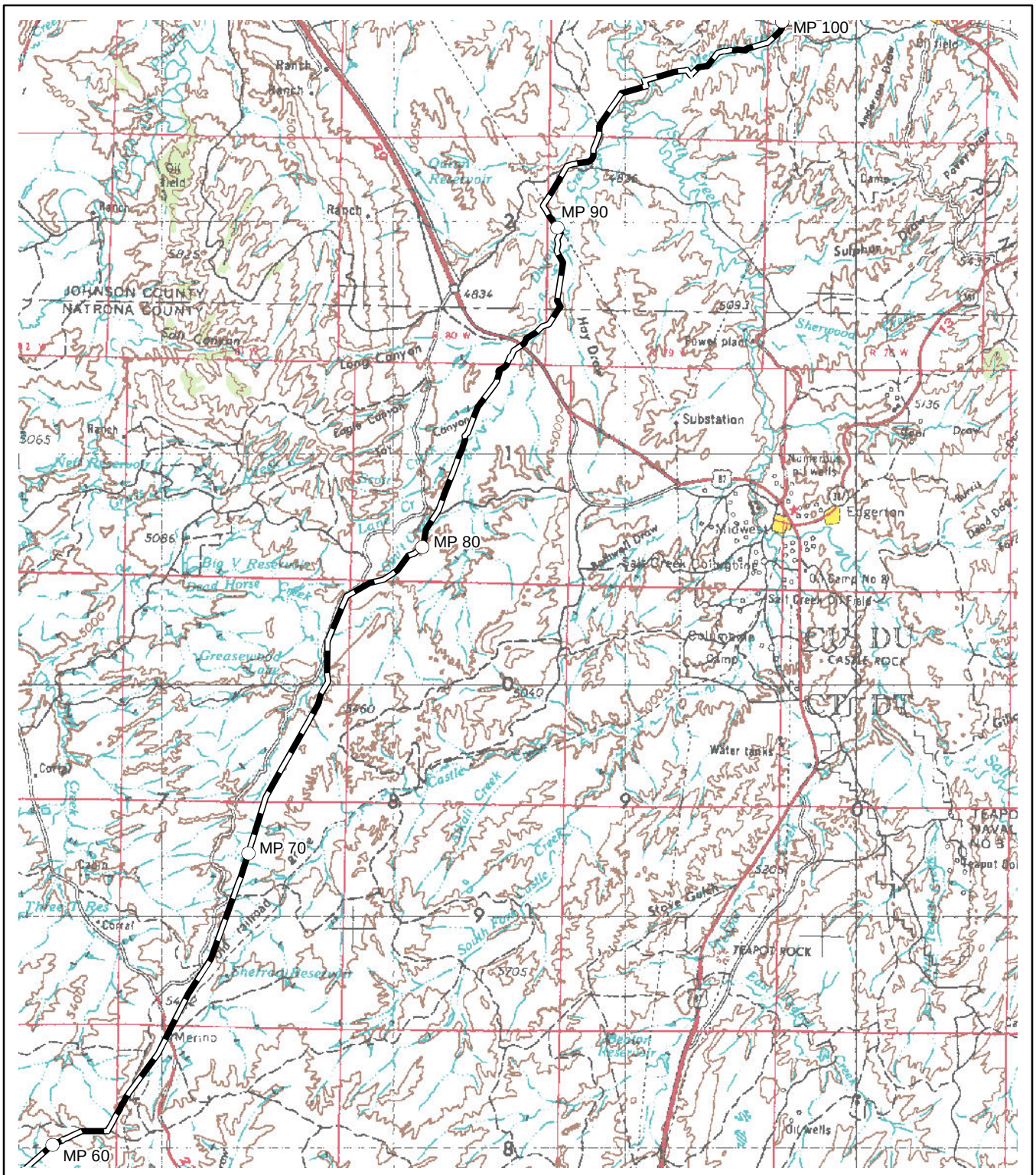

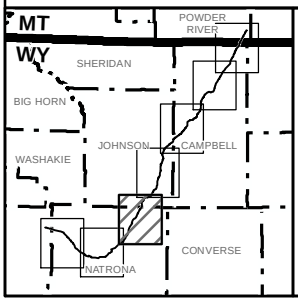

Legend

- Milepost
- Proposed Pipeline Route

Greencore
CO_2 Pipeline Project

Figure 2-1
Proposed Route

MAP 3 OF 7

0 1 2 4 Miles
0 1 2 4 Kilometers
1:250,000
N

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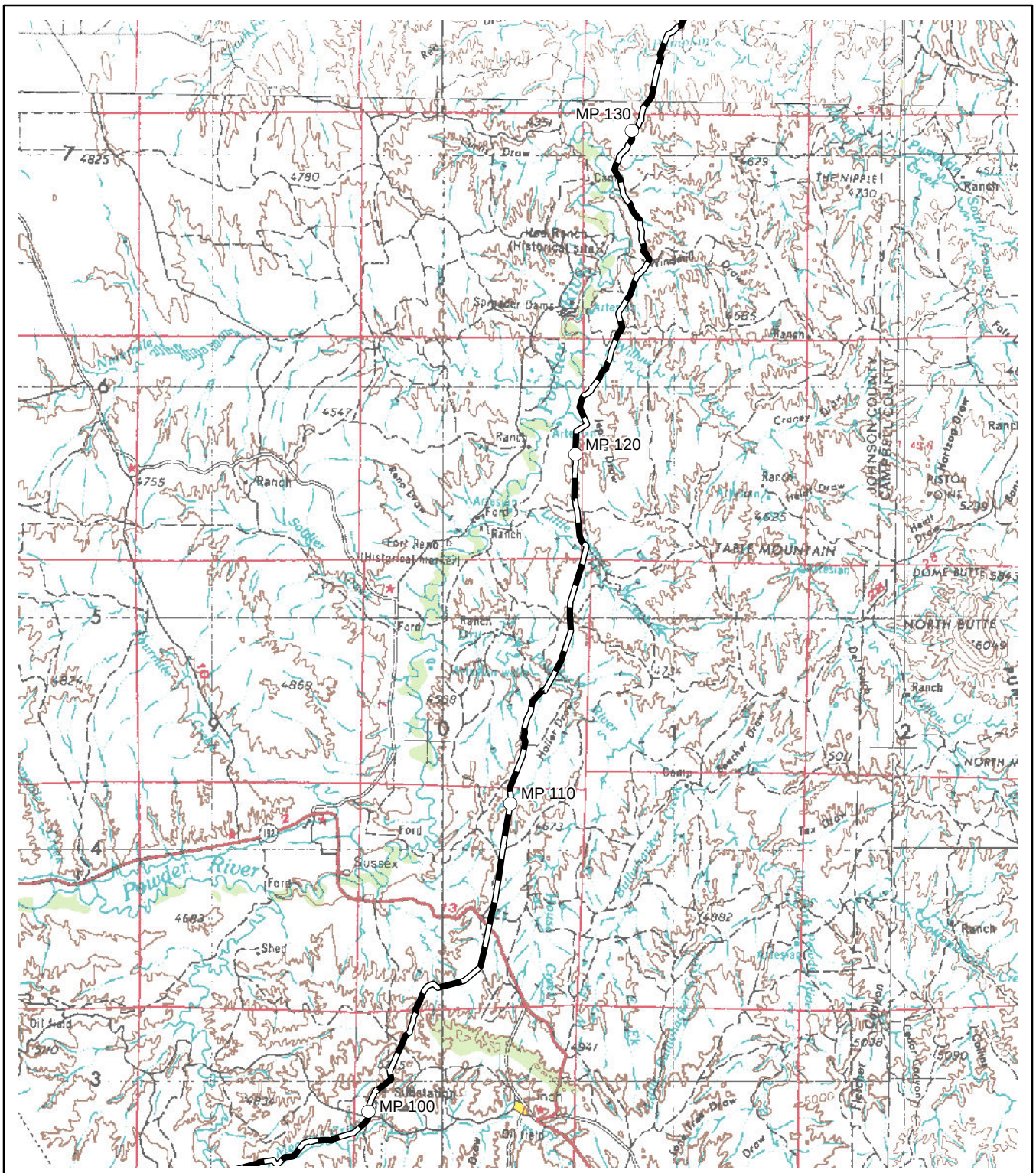
MP 130
MP 120
MP 110
MP 100
TABLE MOUNTAIN
DOME BUTTE
NORTH BUTTE
JOHNSON COUNTY
CAMPBELL COUNTY
Powder River
Sussex
Ranch
Ford
Shed
Oil field
Substation
Inch
Camp
Drew
Draw
Creek
River
Little
Soldier
Hollar Draw
Beacher Draw
Tax Draw
Cedar Canyon
Fisher
Horizon Draw
Hedi Draw
Cranev
Reno Draw
Fort Reno
(Historical marker)
Spreader Dams
Hoe Ranch
(Historical site)
Windmill
Pistol Point
THE NIPPLE
Pumpkin Creek
South Fork
Willow Cr
Willow Creek
Dry Creek
Little Dry Creek
Dry Creek
Little Dry Creek
Antelope Creek
Antelope Draw
Antelope Creek
Antelope Draw
Antelope Creek
Antelope Draw

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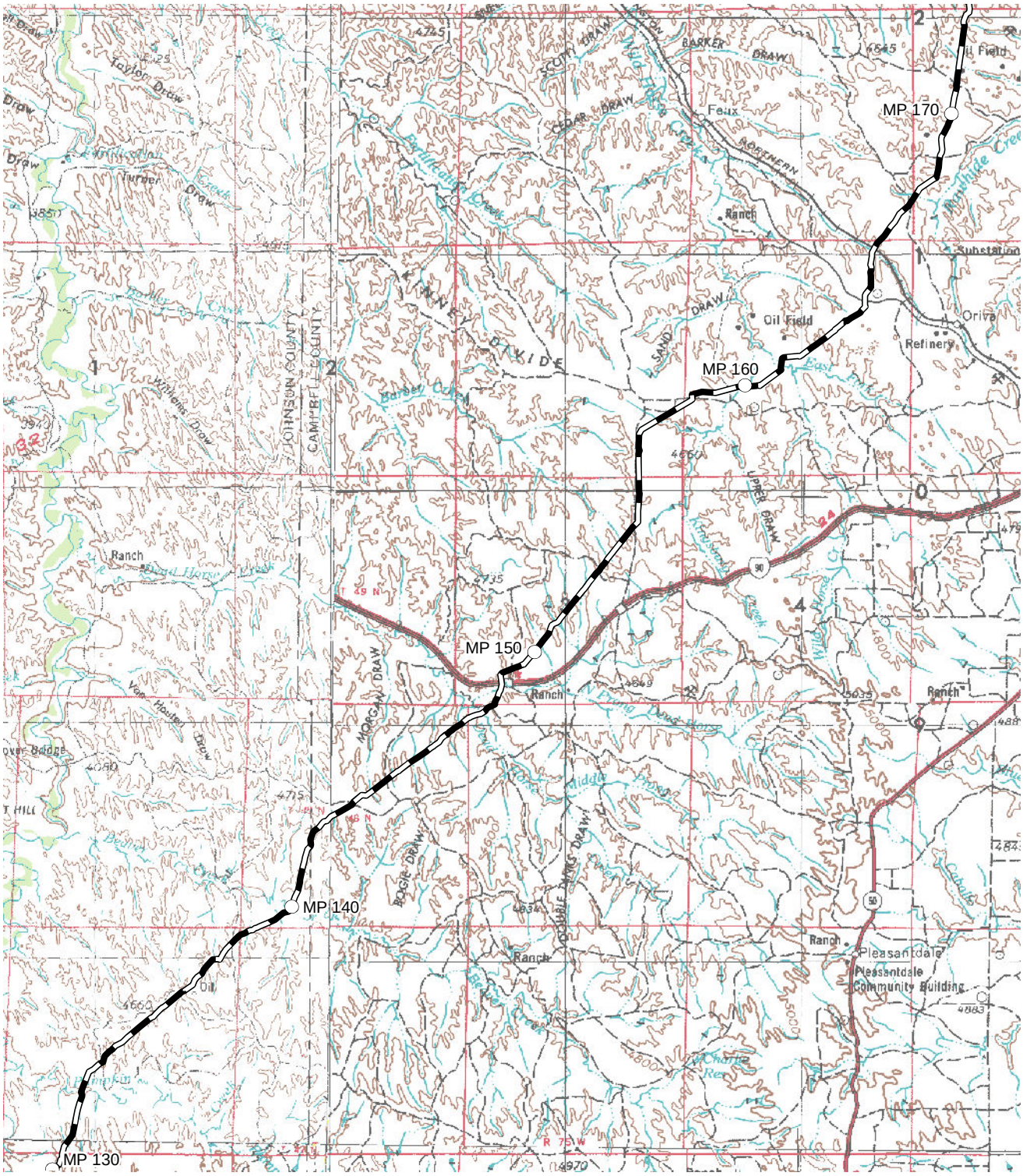
MP 130
MP 140
MP 150
MP 160
MP 170
Oil Field
Refinery
Oriva
Substation
Ranch
Pleasantdale
Pleasantdale Community Building
JOHNSON COUNTY
CAMPBELL COUNTY
BARKER DRAW
CEDAR DRAW
SAND DRAW
UPPER DRAW
MORGAN DRAW
ROGIE DRAW
DOUBLE KING DRAW
Taylor Draw
Williams Draw
Van Houten Draw
Beaver Creek
Bear Creek
Middle Fork
Little Bear Creek
Wild Horse Creek
Dry Creek
Rawhide Creek
Cottonwood Creek
Pumpkin Creek
Chalk Creek
Chalk Rec
Dry Creek
Cabin Creek
Cabin Creek
Cabin

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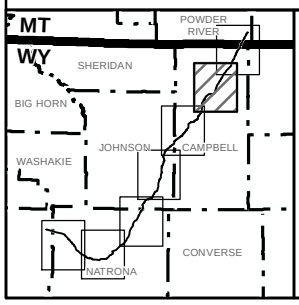


Legend

- Milepost
- Proposed Pipeline Route

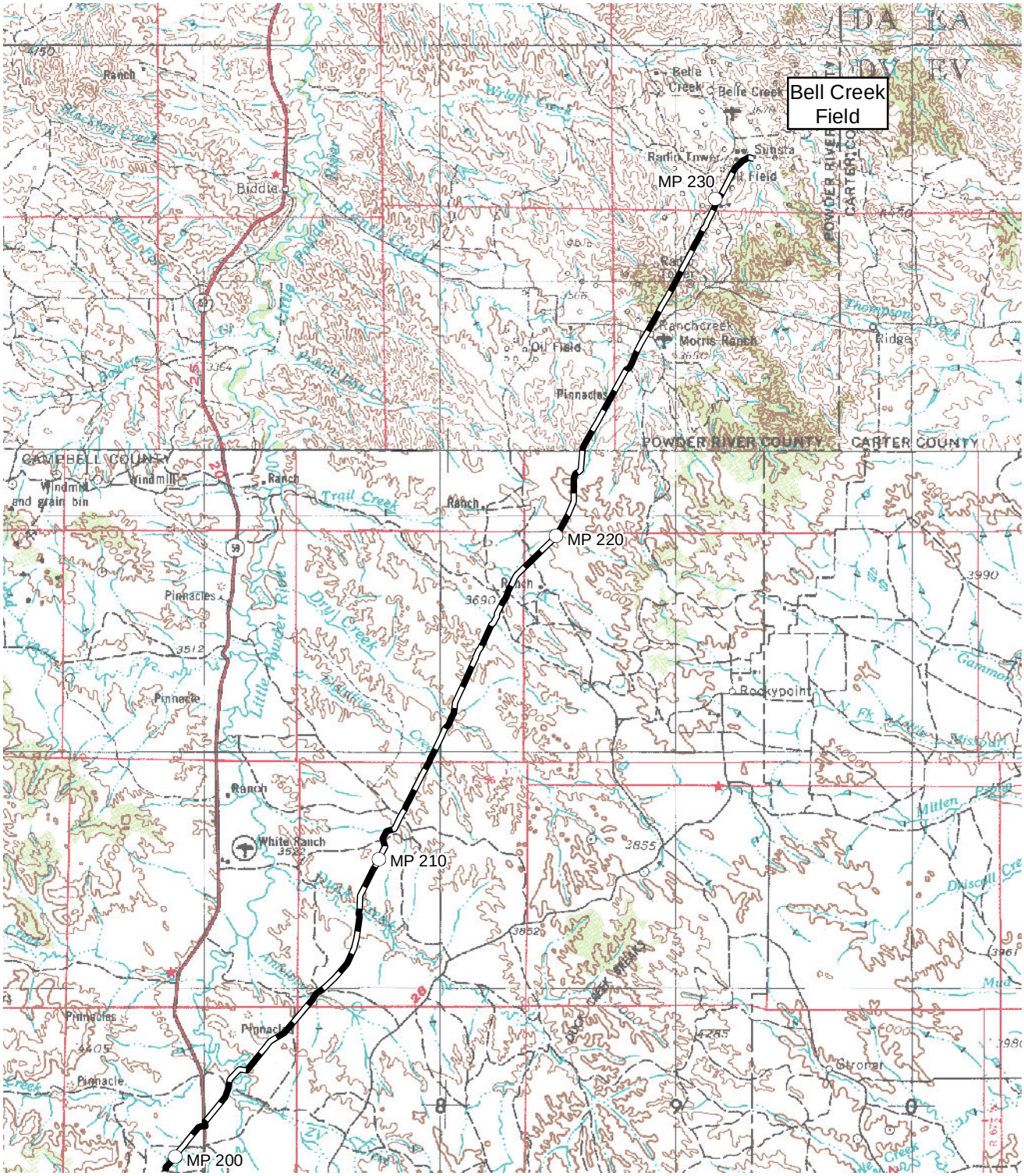
Greencore
CO_2 Pipeline Project

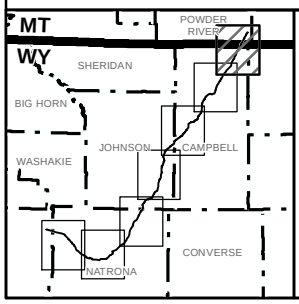
Figure 2-1
Proposed Route

MAP 6 OF 7

0 1 2 4 Miles
0 1 2 4 Kilometers
1:250,000

N





Legend

- Milepost
- Proposed Pipeline Route

Greencore
CO_2 Pipeline Project

Figure 2-1
Proposed Route

MAP 7 OF 7

0 1 2 4 Miles
0 1 2 4 Kilometers
1:250,000

N

X:\0Projects\12603_003_GreencoreCO2PipelineEA\Figures\DocumentFigures\EA_2_DRAFT_201008\FIG_2_1_PROJ_LOC_TOPOBACK_10.mxd

Initially, approximately 50 MMSCFD would be transported through the buried pipeline. Pipeline route markers would be installed at county road crossings, railroads, state and interstate highway crossings, water crossings, property boundaries, and other pipeline crossings in locations where such markers would not interfere with existing land uses. Aerial markers would be installed at intervals along the route and at turning points, where possible, to facilitate periodic aerial patrol of the pipeline.

Based on an analysis of gradient and flow requirements for transporting the CO_2 product, Greencore determined that pumping facilities would not be required for the initial 50 MMSCFD. A hydraulics model was used in this analysis.

Two pipe yard work areas would be used to store pipe prior to transport to the ROW. The pipe storage yards would be located near Casper and Gillette, Wyoming. Pipe would be transferred to the yard via the Burlington Northern Railroad or truck. After pipe unloading from rail cars, the pipe would be transported to the ROW by truck. The estimated number of trucks per day for pipe transport would be 5 to 6 during a 2-month period.

2.2.1.2 Future Pump Station Locations

At approximate MPs 39.5, 144.0, and 231.1, Greencore would purchase land for future pump stations. At these locations, Greencore would install branch tees at mainline block valves to facilitate the future tie-in of these stations. These pump stations would be constructed when product volumes exceed 150 MMSCFD and would include valve manifolds, pumps, pigging equipment, power distribution, and control buildings. Each station would be within an approximate 3- to 10-acre fenced area.

2.2.1.3 Scraper Traps and Block Valves

Scraper traps, which include block valves, would be installed at the following locations: one at Lost Cabin (MP 0.0), two at the future Natrona Hub (MP 39.5), two at the future Interconnect Station (MP 87.2), two at the future Mid Point Pump Station (MP 144.0), two at MP 200.4, and one at Bell Creek (MP 231.1). Block valves would be installed at approximately 15- to 20-mile intervals along the entire length of the pipeline with exception of additional block valves installed at major interstate and state highways for emergency response. The additional tees and valves would be installed at potential future delivery/receipt locations. Scraper traps and block valves would be located as shown in **Table 2-2**. Each scraper trap and block valve area would be graveled and enclosed using a chain link fence, and the disturbance acreage is listed in **Table 2-1**. Access would be year-round, depending upon winter weather.

Table 2-2 Location of SCADA and Manual Valves for the Greencore Project

Type	MP	Location
Lost Cabin – meter run and Block Valve	0.0	T38N, R90W, Section 11
Block Valve	19.7	T37N, R87W, Section 15
Block Valve	32.8	T36N, R85W, Section 36
Future Natrona Hub – Scraper Receipt Trap/Launcher Trap, Tee Block Valve	39.5	T35N, R84W, Sections 1, 12
Block Valve	45.1	T35N, R84W, Section 1
Block Valve	64.6	T37N, R81W, Section 5
Block Valve	83.0	T40N, R80W, Section 28
Future Interconnect – Scraper Receipt Trap/Launcher Trap, Tee and Block Valve	87.2	T41N, R79W, Section 30
Block Valve	100.5	T42N, R78W, Section 18

Table 2-2 Location of SCADA and Manual Valves for the Greencore Project

Type	MP	Location
Block Valve	117.6	T45N, R78W, Section 36
Block Valve	138.5	T47N, R76W, Section 6
Future Mid Point Pump Station – Block Valve, Scraper Receipt Trap/Launcher Trap, Tee Block Valve	144.0	T48N, R76W, Section 15
Block Valve	148.6	T49N, R75W, Section 32
Block Valve	149.3	T49N, R75W, Section 32
Block Valve	158.5	T50N, R74W, Section 30
Block Valve	178.4	T52N, R73W, Section 10
Block Valve	178.9	T52N, R73W, Section 3
Pigging station – Block Valve, Scraper Receipt Trap/Launcher Trap, Tee	200.4	T55N, R71W, Section 22
Block Valve	203.5	T57N, R70W, Section 11
Block Valve	217.9	T57N, R70W, Section 12
Bell Creek Delivery/Terminus Point – Block valve, Scraper Receipt Trap, Tee and meter run	231.1	T8S, R54E, Section 27

2.2.1.4 Bell Creek Delivery Facility

The Bell Creek Delivery Facility would be constructed on an approximately 5-acre site located at the terminus of the pipeline. The site would consist of a meter building (35 feet wide by 75 feet long by 24 feet high), receiving scraper trap, flow control valve, communications and satellite dish, CO_2 vent, and an electric service pole with a pad-mounted transformer. A 72-inch-high, brown, plastic-coated, chain-link security fence would be installed around the facility.

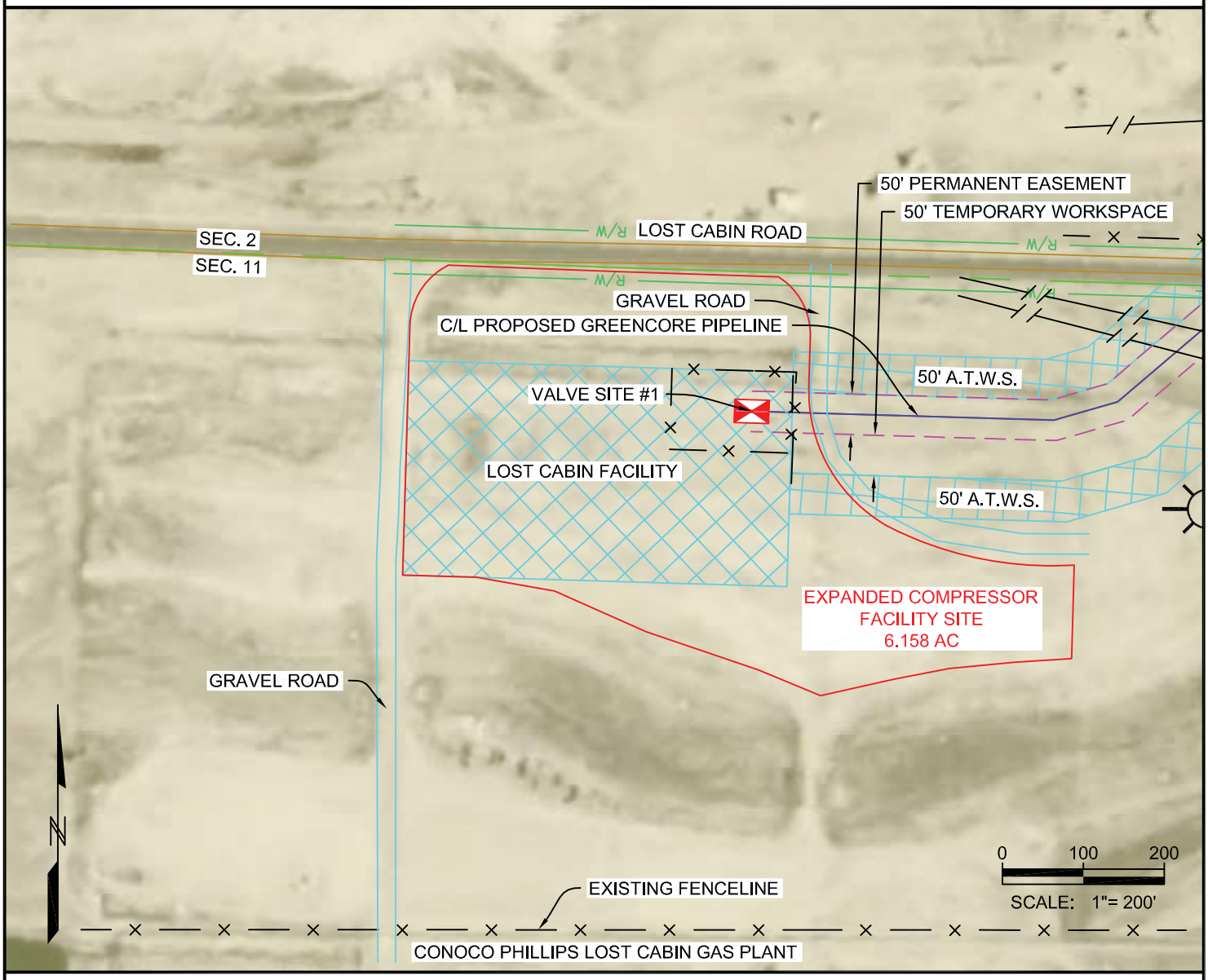
2.2.1.5 Measurement Facilities and Supervisory Control and Data Acquisition (SCADA) System

Measurement facilities would be installed initially at Lost Cabin and Bell Creek, and later at future intermediate receipt and delivery points as they are developed. The Lost Cabin measurement facility is shown in **Figure 2-2**. Each measurement facility area would be graveled and enclosed with a chain-link security fence. Access to these sites would be conducted at 1-week intervals (year-round).

2.2.1.6 Corrosion Protection

The pipeline would be cathodically protected by the coating, rectifiers, and anodes. Rectifiers would be located near valve sites with power distribution available in close proximity and mounted on a pole adjacent to the ROW; associated anodes would be buried. The exact locations of these cathodic protection devices would be determined during the design phase of the Project. If possible, the rectifiers would be placed at the existing planned facility sites. Test leads would be attached to the pipeline at fence lines, other pipeline crossings, roads, and highways to monitor the cathodic protection system. Each set of test leads would be brought to the junction box mounted nearby on a short post. The post and junction box would be installed where it would not interfere with existing land uses.

A PORTION OF SECTION 11,
TOWNSHIP 38 NORTH, RANGE 90 WEST,
FREMONT COUNTY, WYOMING



NOTES:

1. THE PROPERTY LINES DEPICTED HEREON ARE APPROXIMATE. THEY WERE CONSTRUCTED FROM COUNTY ASSESSOR MAPS AND ARE NOT BASED ON FIELD SURVEY DATA.

2. ALL DISTANCES SHOWN HEREON ARE APPROXIMATE AND ARE NOT BASED ON FIELD SURVEY DATA.

A.T.W.S. = ADDITIONAL TEMPORARY WORKSPACE

PREPARED BY: CH2MHILL

CLIENT: GREENCORE PIPELINE COMPANY LLC

REVISIONS

NO.	DATE	BY	DESCRIPTION
A	11/23/10	JTS	ISSUED FOR REVIEW
B	12/2/10	JTS	ADDED EXPANDED COMPRESSOR FACILITY SITE

GREENCORE PIPELINE COMPANY LLC
FACILITY LOCATION REQUIREMENTS

DRAWN BY:	DRAWN DATE:	CHECK'D BY:	PLOT DATE:
JTS	11/23/10	CLJ	11/23/10

APN:

Figure 2-2 LOST CABIN

B
REV.

2.2.2 Environmental Protection Measures as Design Features of the Proposed Action

Greencore has committed to specific environmental protection measures as part of the Project design to minimize potential impacts to natural resources during construction and operation. These protection measures are summarized by resource in **Table 2-3**. For some of the resources (i.e., wetlands, cultural resources, sage grouse, etc.), additional field verifications would be conducted, as needed, to determine the appropriate resource protection measures.

Table 2-3 Summary of Environmental Protection Measures for the Greencore Project

Resource	Environmental Protection Measures As Design Features
Air Quality	• Water or chemical soil binders and best management practices (BMPs) would be used to control dust along the ROW and access roads during construction in accordance with federal, state, and local requirements. • Water for dust control would be obtained from federal, state, and local permitting processes, or purchased through contracts with owners with valid, existing water rights.
Geology and Soils	• Soil erosion would be minimized by implementing procedures described in BMPs, the Storm Water Pollution Prevention Plan (SWPPP) (POD, Appendix E), and the Reclamation Plan (POD, Appendix J). • If construction is planned during a storm event, vehicle traffic and equipment would be restricted to prevent rutting in excess of approximately 4 inches deep.
Water Resources and Wetlands	• The SWPPP and BMPs would be implemented to minimize storm water transport of sediment from disturbed areas to streams and wetlands. All Project-related storm water and hydrostatic test water discharges would be in compliance with a NPDES permit. • Greencore has committed to not constructing aboveground facilities and staging areas within wetlands, riparian areas, or other waters of the U.S. • Greencore has committed to locating ATWSs a minimum of 50 feet outside wetland boundaries. • No refueling or lubricating would occur within 100 feet of wetlands and other waterbodies or drainages. Hazardous materials, chemicals, fuels, etc. would not be stored within 100 feet of wetlands or waters of the U.S. • Application of herbicides or pesticides within the vicinity of wetlands and waterbodies would follow pesticide use protocol and restrictions outlined in the Noxious Weed Management Plan (POD, Appendix K). • Topsoil within the trench line would be segregated from subsoil in wetland and riparian areas for use in reclamation as specified in the Project Reclamation Plan. • Biologists familiar with wetland and riparian identification would post signs at the edges of the wetland/waterbody features prior to construction. • Where crossings of riparian or wetland areas cannot be reasonably avoided, the construction ROW width would be reduced to approximately 75 feet and measures would be taken to limit impacts as described in the POD. • The horizontal directional drill crossing method would be used at the Horse Creek, Wild Horse Creek (extended wetland), Little Powder River, and Donner Reservoir crossings, which would avoid in-stream impacts and reduce erosion along the banks of these waterbodies.
Vegetation, Agriculture, and Range	• Revegetation seed mixes would be developed in coordination with the BLM and private landowners. The Project Reclamation Plan would outline the procedures to be followed to return the land to pre-existing vegetative cover and land uses. • The Project's Noxious Weed Management Plan (POD, Appendix K) would be implemented to minimize the spread of noxious weeds. A Draft Pesticide Use Proposal (PUP) would be included in the Noxious Weed Management Plan. • Woody (tree) species removed during construction in riparian and/or wetland areas would be replanted from nursery stock or cuttings, as outlined in the Project's Reclamation Plan. • Any range improvements such as fences, gates, cattle guards, and developed water sources located within disturbance or access routes would be repaired to the satisfaction of the BLM or

Table 2-3 Summary of Environmental Protection Measures for the Greencore Project

Resource	Environmental Protection Measures As Design Features
	private landowner. • As determined by the Environmental Inspector (EI), soft plugs would be installed at well established livestock trails to allow livestock crossing of the trench. Ramps also would be installed, as needed, to allow livestock that enter the trench a way to exit. If construction would disturb or destroy a natural barrier used for livestock control, the opening would be temporarily closed during construction and permanently closed following construction, as required by the BLM or private landowner. • If threatened, endangered, candidate, or sensitive plant species are identified prior to construction, Greencore would coordinate with the BLM and USFWS to determine appropriate protection measures.
Wildlife and Fisheries	• For the measures below that include seasonal stipulations, Greencore would coordinate with the BLM to determine the applicability of specific dates and areas where those stipulations would be implemented. Greencore would coordinate with the BLM Field Offices to determine if additional surveys would be required prior to the initiation of construction. • Appropriate wildlife and fisheries protection measures would be implemented during all phases of construction in coordination with BLM, USFWS, and other jurisdictional agencies. • Prior to the initiation of construction, applicable biological surveys would be conducted through areas of suitable habitat for specific species during the appropriate season, as determined by the jurisdictional agencies (e.g., BLM and USFWS) and survey results reported in compliance with Section 7 of the ESA. • To prevent adverse impacts to pronghorn, a seasonal construction constraint (November 15 – April 30) would be implemented in areas of crucial winter range. • Greencore has committed to not disturbing migratory bird habitat on currently undisturbed lands between April 15 and July 31 to comply with the Migratory Bird Treaty Act (MBTA). • To avoid direct impacts to breeding raptors, Greencore has committed to implement a construction schedule that would avoid the raptor nesting period (February 1 – July 31). • Greencore has committed to conducting two additional aerial surveys during the winter of 2010/2011 to identify bald eagle winter roosts. Appropriate site specific protection measures (i.e., buffers and timing constraints from November 1 – March 31) would be implemented at bald eagle winter roosts identified during aerial surveys. • Greencore has committed to conducting pre-construction pedestrian nesting burrowing owl surveys through areas of potentially suitable habitat (i.e., prairie dog colonies) to avoid direct impacts to breeding burrowing owls. • Greencore has committed to conducting two additional aerial surveys during the winter of 2010/2011 to determine greater sage-grouse winter concentration areas. Appropriate protection measures (i.e., buffers and timing constraints from November 15 – March 14) would be implemented on a site specific basis. • To avoid potential impacts to breeding greater sage-grouse, Greencore would implement a permanent 0.6 mile No Surface Occupancy (NSO) buffer around occupied leks in Core Areas and a 0.25 mile NSO lek buffer in Non-core Areas. Any site specific modifications to NSO buffers would require authorization by the BLM. • Greencore has committed to not constructing during the greater sage-grouse breeding season (March 15 – June 30). • Mountain plover nest surveys would be conducted if construction occurs during the mountain plover breeding season (March 15 – July 31). If the mountain plover were listed as a federally threatened species, prior to, or during construction, Greencore would consult with the BLM and USFWS to determine appropriate protection measures. • Pipeline markers would not be placed near greater sage-grouse leks or in mountain plover habitat to reduce predation opportunities. • Greencore would coordinate with the BLM to determine appropriate protection measures for black-tailed and white-tailed prairie dog colonies that would be directly disturbed by the Project.

Table 2-3 Summary of Environmental Protection Measures for the Greencore Project

Resource	Environmental Protection Measures As Design Features
	• Measures for protection of water resources that would reduce potential impacts to fish and their habitat are included in Appendix E of the POD. • In perennial sections of streams containing substrate for spawning trout, trenched construction would be avoided during the spawning periods, or the horizontal directional drill (HDD) method would be used to cross the streams.
Recreation and Visual Resources	• Measures would be implemented to minimize the visual effects of construction on high value road, river, and trail crossings as identified by the BLM. • To prevent unauthorized use of the ROW by off-road vehicles (ORVs) and subsequent potential impacts to soil, vegetation, and wildlife resources, access would be blocked at locations specified by BLM representatives or private landowners.
Socioeconomics and Transportation	• All major highway crossings would be bored to limit traffic interruptions. • For minor roads that would be trenched, temporary alternate access would be maintained such that delays would be limited to no more than 10 minutes per hour.
Cultural and Paleontological Resources	• Prior to the Project construction, cultural resource inventories would be conducted on all previously uninventoried lands in proposed disturbance areas, in accordance with the Programmatic Agreement (PA) in **Appendix B**. • Impacts to the Texas and Bozeman trails would be minimized in accordance with the PA and as determined by the BLM and SHPO. • Construction monitoring during ROW preparation would be conducted where the pipeline route crosses prehistoric sites. Cultural materials discovered during monitoring would be handled according to the procedures detailed in the PA. • Open trench inventory (OTI) would be conducted in accordance with the provisions of the PA • Construction would be halted within 328 feet of discovery of human remains, and the find reported to the BLM Authorized Officer immediately. The discovery would be evaluated and treated in accordance with appropriate state laws and the provisions of the PA. • Paleontological surveys would be conducted prior to and during construction. A final Paleontological Technical Report would be prepared and submitted to the BLM following completion of construction. The final report would contain the results of the work conducted, including an accession list of fossil specimens collected and listed by locality. • In areas where the potential for occurrence is high, a paleontologist would monitor the trench excavation and salvage potentially significant fossiliferous deposits. Measures would be taken to identify and preserve the fossils as detailed in the Project Paleontological Assessment Report. • To minimize indirect impacts to cultural and paleontological resources, Greencore would educate Project-related personnel as to the sensitive nature of the resources; a strict policy of prohibiting collecting of these resources would be implemented.

2.2.3 Construction

As part of the EA process, Greencore has developed a detailed POD, which would become part of the ROW Grant approved by the BLM. The POD addresses the specific details regarding pipeline construction, reclamation, BMPs, and site-specific environmental protection measures on federally owned and private lands. EIs would be present during construction of the line to ensure that these measures are implemented. The Project's Emergency Response Plan (POD, Appendix L) describes the fire prevention and suppression techniques that would be implemented to reduce the potential for a construction-related fire, which could potentially impact vegetation, agricultural resources, and wildlife.

The following is a list of major construction activities in order of occurrence along the spread:

- ROW clearing and grading;
- Topsoil salvage;
- Trenching;
- Stringing;
- Welding, and radiographic examination;
- Joint coating and repair;
- Lowering in;
- Trench back-filling;
- Hydrostatic testing and final tie-ins; and
- Cleanup and reclamation.

These operations are described in more detail in the POD. **Figure 2-3** illustrates the components of a typical spread. Appendix G of the POD provides the typical ROW configuration for the Project (locations of topsoil, trench spoil piles, etc.). Typical construction equipment for this type of project includes pickup trucks, loaders, various sized dozers, shovels and backhoes, side booms, generators, and bending machines. Most of the equipment that would be used during ROW reclamation consists of dozers, blades, and trackhoes. Construction workers would live in permanent residences, local motels, rented houses or lodging, personal trailers, or pickup campers. Crew transports and privately owned vehicles would be used to transport workers to the construction site.

Temporary headquarters for construction personnel, weld fabrication, and equipment storage yards likely would be located at or near Casper and Gillette, Wyoming. Temporary headquarters would consist of an office trailer, one or more warehouse trailers (or suitable rented space, if available), and the contractor yards.

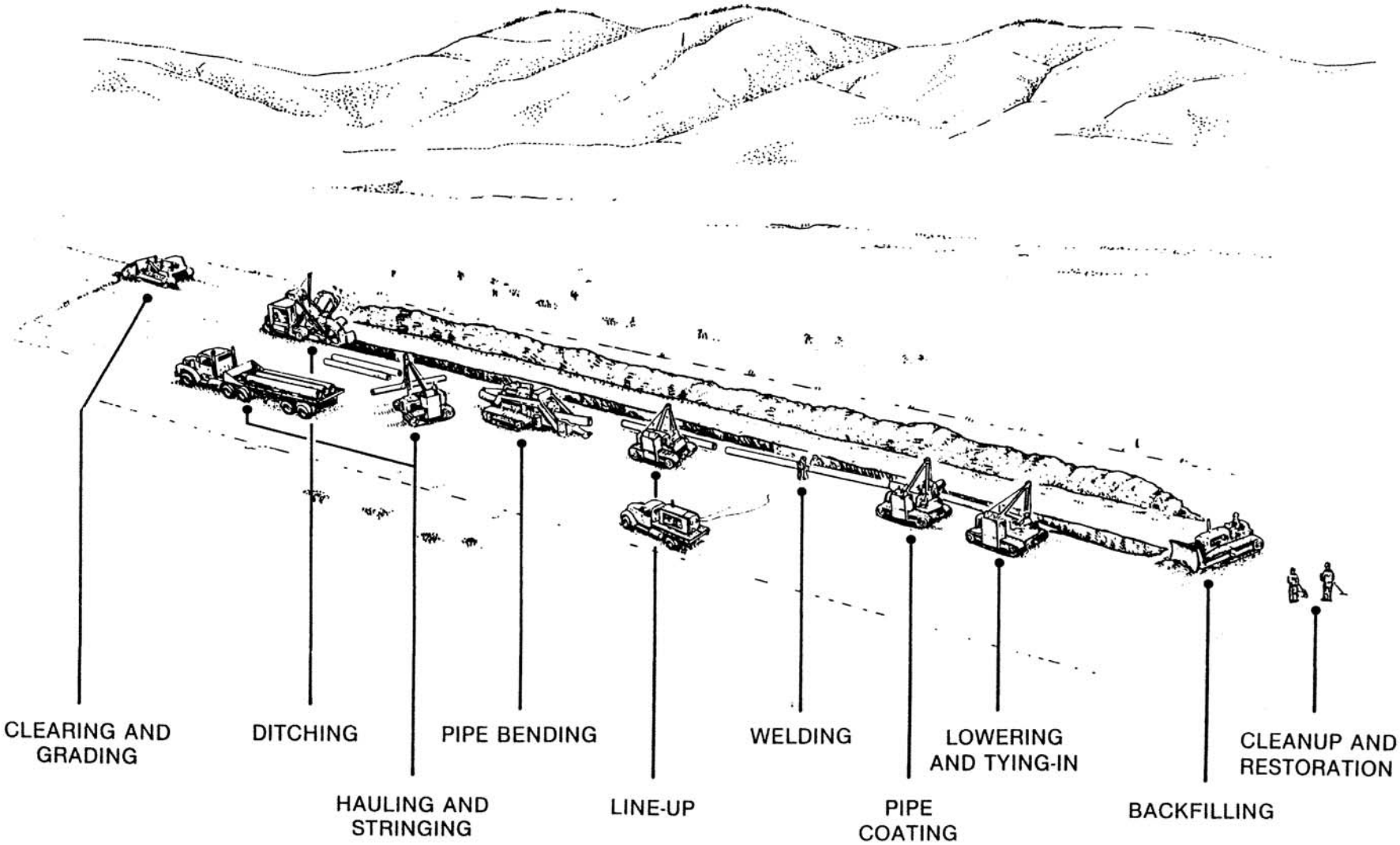
The pipe and equipment would be shipped to an area northwest of Casper and near Gillette via trucks and/or railroad. Approximately 57,900 metric tons of 20-inch-diameter by 0.441-inch (average) wall thickness pipe would be required for the Project. Distribution of pipe to construction sites would require an average of 15 to 20 truckloads per day during the period of peak activity. The use of signs and markers on light-duty and heavy-duty roads would follow current BLM standards. Prior to construction, company and contractor employees would be instructed to use only designated access roads (identified in Appendix D of the POD), and as approved in the ROW grant for access. All off-road driving would be prohibited.

ATWSs would be required for jurisdictional water crossings, difficult terrain, select wetland crossings, and federal, state, and county road crossings. The location and estimated area for the ATWSs are provided in Appendix C of the POD.

During construction of the Project, Greencore would comply with existing federal, state, county, and private requirements developed to protect road networks. Load limit restrictions would be observed at all times to prevent damage to the road surface. Any special permits would be obtained for oversized and heavy loads from the appropriate agency.

2.2.3.1 Pre-Construction

All biological and cultural resources permit requirements, impacts, and any designated avoidance areas and seasonal restrictions would be identified prior to construction. Constraint areas would be included on the alignment sheets. The permits required for construction of the Project are listed in **Table 1-1**.



GREENCORE PIPELINE COMPANY LLC

Figure 2-3
Typical Rural
Construction Spread

Civil engineering surveys would identify the centerline of the Project route and the boundaries of both sides of the approved working limits before construction activities commence. EIs would be responsible for verifying that the limits of authorized construction work areas are staked prior to construction. Flagged or painted lath would be set at 200-foot intervals (maximum), or as required to maintain line of sight along the centerline. All ATWSs would be marked in a similar fashion, and corners of each ATWS would be marked. Staking would clearly show the boundary of the area that can be used or accessed by construction personnel.

Prior to earth moving activities, BMPs incorporated into the Project POD would be implemented to limit sediment transport and erosion. BMPs are usually site-specific and depend on current site and weather conditions. The EIs also would be responsible for designating areas that should utilize BMPs or make adjustments to BMPs as needed and as approved by the BLM. The SWPPP (POD, Appendix E) contains specific BMP information and serves as a reference throughout the Project to ensure proper sediment and erosion control.

2.2.3.2 ROW Clearing and Grading

A nominal working width of 100 feet would be required for construction. The width of the ROW may be reduced while crossing wetlands and waterbodies if they are not bored or drilled. All construction equipment would work off of timber mats in waterbodies and wetlands that are saturated to the surface. BMPs would be utilized at each crossing to reduce direct and indirect effects associated with sedimentation, erosion, and soil compaction, which in turn reduces the affects to the vegetation and habitat for wildlife. Construction schematics (typicals) for crossing these areas are included in Appendix F of the POD. The EI would be consulted prior to each of these crossings to ensure permit compliance.

Vegetation would be cleared and trees would be cut with a chain saw and/or mechanical shears and brush would be generally cut with a hydro-axe or brush-hog. Trees and brush would be cut as close to the ground as possible. On private and public lands, brush and other materials cleared from the ROW typically would be incorporated into the reclamation of the ROW. Private landowners may have other stipulations for disposing of these materials. Stumps would be left in place except over the trenchline or as necessary to create a safe and level workspace. Greencore proposes to use an EI to coordinate with the appropriate agency or landowner to locate areas for stump disposal, if required.

Where grading is needed to create a safe, level, working area, approximately 4 to 6 inches of topsoil would be stripped from the full construction ROW prior to grading operations. There may be some areas where the contractor would not need to grade and topsoil. For example, level fields or pastures may not need to be graded for construction. In these cases, the contractor can avoid topsoiling, except over the trenchline, which would preserve the root system and increase reclamation success.

In areas where the Project would parallel an existing pipeline, the new line would be kept at a distance of 25 to 40 feet away. A 5- to 10-foot-wide safety zone (where possible) would be established next to the existing pipeline to protect it from construction activities.

Functional use of all livestock facilities and other public improvements would be maintained at all times. Fences would be adequately braced along both sides of the ROW before wires are cut and gates are installed. Permanent gates may be installed, with landowner permission, to provide access to the pipeline ROW. If a natural barrier used for livestock control were damaged during construction, the area would be adequately fenced to prevent the escape of livestock. No gates on established roads over public lands would be locked or blocked. Any cattle guards or gates damaged during construction would be repaired or replaced.

<u>Survey Monuments</u>

All survey monuments found within the ROW would be protected. If any survey monuments found within the ROW or temporary use areas are disturbed or obliterated during the course of the Project, the Contractor would immediately report it to Greencore. Greencore would report the incident in writing to the Authorized Officer and the respective installing authority (if identified).

2.2.3.3 Trenching

Trenching would be used for all sections of the ROW except for areas identified for slick boring or HDD as outlined in the POD. Trenching operations would be timed so that the trench is backfilled as soon as practical. Construction methods used to excavate a trench would vary depending on soils, rock, terrain, and related factors.

Excavated subsoil would be stored separately from windrowed topsoil piles. Like topsoil, subsoil would not be stored in flowing waterbodies, dry drainages or washes that cross the ROW. Gaps would be left periodically in the subsoil piles to avoid ponding and excess diversion of natural runoff during storm events, where necessary.

Measures would be taken to ensure that access is provided for private landowners or tenants to move vehicles, equipment, and livestock across the ditch where necessary. Adequate precautions also would be taken to ensure that livestock are not prevented from reaching water sources because of the open ditch. Measures to be taken include contacting livestock operators and providing adequate crossing locations.

The Contractor would keep wildlife and livestock trails open and passable by adding soft plugs (areas where the trench is excavated and replaced with minimal compaction) during the construction phase, as determined by the EI. Soft plugs with ramps on either side would be left at all well-defined livestock and wildlife trails to allow access across the trench and provide a means of escape for livestock and wildlife that may fall into the trench. These well-defined trails would be identified on the construction alignment sheets, and soft plug installation would be verified by the EIs.

The depth and width of the ditch would vary depending upon soil types. A typical ditch would be excavated approximately 4 feet wide at the bottom and the sides would be sloped to Occupational Safety and Health Administration (OSHA) specifications (up to approximately 8 feet wide). The depth of the ditch would vary approximately 5 feet (standard trench) to approximately 7 feet through drainages, road crossings, from agricultural land, and waterways.

Paved roads would be bored to avoid disrupting traffic in accordance with governing agency and permit requirements. Pipeline crossings of un-surfaced or lightly traveled roads would be made with a mechanical ditching machine or a trackhoe (unless a permitting agency requires a bore). Installation at these locations, including cleanup and reclamation of road surfaces, would usually be completed within 1 day. In such cases, provisions would be made to detour or control passage of traffic during construction. Signage and traffic control flaggers may be required.

2.2.3.4 Trench Backfilling

Once the pipe has been strung, welded, and lowered in, backfilling would occur as soon as possible after the pipe has been lowered into the trench. Backfill may be compacted to increase stability and prevent air pockets and future non-uniform settling. Segregated topsoil would be returned to the trench after the subsoil is replaced. After the pipe is lowered in, the ditch would be backfilled, with any segregated topsoil going in last, returning it to its original position.

Trench breakers would then be installed on slopes, as identified in the POD. Prior to backfilling the trench, the equipment operator would check the trench for wildlife and/or livestock to ensure any wildlife or livestock found in the trench are removed before backfilling begins.

The Contractor would place a crown over the trench approximately 0.5 feet in height to account for subsidence (except at road crossings where compaction would be adequate to keep the roadway flat). Written authorization from the private landowner is required to eliminate the crown.

2.2.3.5 Blasting

Where rock is encountered, tractor-mounted mechanical rippers or rock trenching equipment may be used to facilitate excavation. In areas where rippers or trenchers are not practical or sufficient, blasting may be employed. However, no blasting is anticipated for the Project. Should blasting be required, a site specific plan would be developed in accordance with all federal, state, and local regulations and requirements. All necessary authorizations would be obtained and safety precautions observed. The Contractor is responsible for obtaining permits to store blasting materials.

2.2.3.6 Highway, Railroad, and Road Crossings

At major paved highway and railroad crossings (**Table 2-4**), the pipeline would be dry (slick) bored or directionally drilled to conform to requirements of the Wyoming Highway Department and/or Montana Department of Transportation. Current plans are to bore all established paved roads. Boring activities would not be conducted within the road ROW limits. Greencore would keep all road surfaces free of dirt, rock, or other debris that could be a hazard to the public.

Table 2-4 Highway and Railroad Crossings for the Greencore Project

Highway or Railroad	MP	Type of Surface	Road/Railroad ROW Width	Crossing Method
Burlington Northern Railroad	19.1	Tracks	240	Bore
Highway 20/26	33.1	Asphalt	576	Bore
Highway 20/26	45.4	Asphalt	360	Bore
Burlington Northern Railroad	46.0	Tracks	300	Bore
I-25 and Service Road	86.9	Asphalt	910	Bore
Highway 192 /Sussex Road	107.0	Asphalt	360	Bore
I-90	149.8	Asphalt	960	Bore
Burlington Northern Railroad	166.0	Tracks	1020	Bore
Highway 14/16	178.9	Asphalt	240	Bore
Highway 59	201.2	Asphalt	300	Bore

Notes: All unidentified dirt roads would be open cut.

2.2.3.7 Stream and Wetland Crossings

Plans and procedures for typical wetland and waterbody crossings are provided in Appendix F of the POD. Greencore has aligned waterbody crossings as close to 90 degrees as possible to minimize impacts to riparian vegetation. Vegetation would be cleared on each stream bank only as needed to provide sufficient work space and spoil storage.

All waterbodies would be crossed via open cut construction method except for Horse Creek, Wild Horse Creek (extended wetland), Little Powder River, and Donner Reservoir, which would be crossed by HDD. The HDD construction method is described in Section 3.8.1 of the Project POD. Only drilling fluid containing bentonite (no additives) would be used during HDD. In the event of a “frac-out” at a waterbody crossing, steps would be taken as outlined in the Frac-Out Contingency Plan (POD, Appendix H).

Standard equipment would be operated on timber mats in saturated wetlands. ATWSs would be located a minimum of 50 feet outside wetland and waterbody boundaries, and 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 method. Grass or herbaceous vegetation would not be removed except immediately over the trench line. 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.

If standing water and unstable soils interfere with construction, the trench may be dewatered by pumping. Trench water would be discharged from the trench in accordance with the Wyoming Department of Environmental Quality (WDEQ) and Montana Department of Environmental Quality (MDEQ) regulations.

In hilly areas, depending on the pipeline gradient, sack breakers (sacks filled with sand or smooth soil) would 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 would be backfilled with spoil and topsoil excavated from the trench.

2.2.3.8 Water Withdrawals for Hydrostatic Testing, Directional Drilling, and Dust Abatement

Once the pipe is in place, the system would be tested with pressurized water to locate any leaks or weak spots. The entire pipeline would be hydrostatically tested to at least 125 percent of maximum operating pressure. It currently is estimated that approximately 18,300,000 gallons of water would be required for hydrostatic testing and that seven pipe sections would be tested concurrently. The test water would be obtained from a permitted source through a Water Use Agreement with the State Engineer and negotiations with water rights owners. Test water would be reused in testing each section of the pipeline if possible. The test water would be shunted from section to section of the pipeline for testing and eventually disposed of in accordance with federal, state, and local agency requirements. Hydrostatic test water would be discharged through straw bale structures and then released to a permitted discharge location as described in the Project Hydrostatic Testing Plan (POD, Appendix I). Consumptive water use would be required for directional drilling and dust abatement. Approximately 370,680 gallons (1.1 acre-feet) would be obtained from a permitted source for mixing with bentonite during directional drilling at the HDD crossings. Additional water would be obtained from permitted sources (irrigation companies or municipal sources) for dust abatement.

2.2.3.9 Cleanup and Reclamation

Where the side hill slopes are gentle, the material graded from the working width would be replaced, contoured, and reclaimed as nearly as practical to preconstruction conditions. Water bars would be constructed in steeper areas to prevent erosion.

Greencore would implement conditions found in the Reclamation Plan (POD, Appendix J) for erosion control, revegetation, and reclamation to be approved by the BLM. Reclamation procedures would be developed on a site-specific basis in that plan.

After backfilling and cleanup are complete, the soil would be chiseled with suitable equipment to ameliorate compaction and improve soil permeability. A firm and friable seed bed suitable for the establishment of vegetation would be provided. The seed bed also would be disked prior to planting. Mulch or other stabilizing materials would be placed on the disturbed area for erosion control, as needed.

Revegetation of lands disturbed by construction would be in accordance with the Project Reclamation Plan. Species and seeding rates effective in controlling erosion would be used to revegetate the disturbed areas. Species would be selected after consideration of climatic adaptation, species adaptation to soil texture, possible adverse conditions such as drought or saline soils, palatability to wildlife, and shrub cover for wildlife. Generally, commercially available native species, as approved by the landowner or surface management agency, would be used.

Suitable mulches and other soil stabilizing practices would be used where necessary to protect bare soil from wind and water erosion and to improve water infiltration. Cultivation and land preparation operations on steeply sloping areas would be performed along the contour to minimize erosion.

Disturbed and reseeded areas would be inspected periodically to monitor the success of erosion control measures and revegetation programs. The monitoring program would help identify problem areas and corrective measures to ensure vegetation cover and erosion control. In addition, a weed control program would be developed for disturbed areas as part of the Noxious Weed Management Plan (POD, Appendix K). A BLM approved PUP would be developed prior to the use of herbicides and pesticides. A draft PUP is included as Appendix B of the Noxious Weed Management Plan.

2.2.3.10 Special Construction Areas

The Project was studied for sensitive areas that would require more extensive reclamation and construction efforts. Additionally, the reclamation efforts of the adjacent pipelines (e.g., Anadarko/Howell Pipeline) were studied for application to the Project. These special construction areas are discussed below.

Close Proximity to Collocated Utilities

The Project is collocated with existing utilities for approximately 91 percent of the pipeline route. When the situation occurs that the Project is within 25 feet of the utility, Greencore would take added precautions to support pipeline construction. As discussed in the POD, adjacent utilities would be staked via the One-Call System for existing utility locations.

Surface Slumping

The Project ROW would be reviewed for surface slumping in the detailed engineering design phase of the Project. If the problem is shallow surface slumping, no action is planned if outside the construction ROW as it would pose no threat to the Project. If the problem is more severe than shallow surface slumping, a design would be developed to address future surface slumping.

Bank Erosion

Waterbody crossings would be reviewed during the detailed design phase to ensure all potential bank erosion issues are addressed. Crossing approaches would be tapered to gradual slopes and water bars installed, if required, to eliminate small abrupt changes in elevation. The new gradual slope would taper to match the undisturbed terrain. BMPs would be initiated as described in the SWPPP to reduce erosion and limit sediment transport (POD, Appendix E).

Highly Eroded Areas

The Project would be reviewed for any areas of potential eroded terrain with steep banks. If the soil has limited cohesion making reclamation to original contours difficult, the pipeline ROW would be graded to blend into the adjacent terrain.

Active Faults

Active faults along the pipeline ROW would be studied during the detailed engineering phase of the Project. A design would be developed at that time which would mitigate the effects from fault movement.

2.2.3.11 Hazardous Materials/Wastes

Hazardous materials would be used and maintained per the Material Safety Data Sheet (MSDS) and disposed of accordingly. All hazardous materials/wastes disposal would be in accordance with federal, state, and local requirements.

2.2.4 Operation

The SCADA System located at the measurement facilities would provide continuous operating data. Pressure, temperature, flow rate, totalizing flow, pressure alarms, and status alarms would be transmitted via satellite to the control center.

A Project SCADA control center would be utilized at the Lost Cabin supply station, mainline valve sites, and Bell Creek meter stations, which would communicate data and status information back to the main control center. Future potential pump stations also would have unit control centers that communicate data and control status back to the existing SCADA control center.

The ROW would be periodically inspected by an aerial patrol. Surface traffic would be limited to workers performing pipeline and valve maintenance, periodic monitoring and inspection, and emergency repairs to the pipeline or associated equipment.

The permanent work force for pipeline operation would be an incremental increase of eight full time positions, probably stationed at Casper or Gillette. Pipeline maintenance, as required, would be done with local contractors specializing in this type of work. The annual cost of pipeline operation and maintenance is expected to be approximately $3.75 to $4.5 million per year, depending upon delivery volumes.

No hazardous materials or wastes would be used or produced as part of the Project operation.

2.2.4.1 Transmission Lines

Transmission lines necessary to provide electricity for aboveground facilities would be permitted, constructed, and operated by local utility providers.

2.2.4.2 Rupture Scenario Monitoring

Pinhole leaks during operation of the pipeline could occur but would not be expected to be serious. The leak would probably cause a high-pitched sound made by the escaping gas and would form a white frost spot on the ground. Periodic inspection would identify such leaks, which would be repaired.

2.2.5 Abandonment

BLM standard stipulations would be followed as part of the abandonment process, as discussed in the POD. At the Project termination, all surface facilities would be removed, and the disturbed acreage would be reclaimed. The areas would be reshaped to blend into adjoining areas to the extent permitted by existing conditions. All disturbed areas would be seeded with the appropriate seed mixture to ensure that an acceptable stand of vegetation is established.

2.3 No Action Alternative

The No Action Alternative would be the denial of the requested ROW. This means that the Project would not be authorized across federal lands. Neither the benefits nor the impacts outlined in this EA would be realized.

2.4 Alternatives Considered but Eliminated From Detailed Analysis

2.4.1 Truck Transportation of CO_2

Truck transportation of CO_2 from the Lost Cabin Gas Plant or other sources would require approximately 105 to 450 trucks each day. Many of the existing roads could not accommodate the increased traffic volume and would need to be expanded. Transportation of CO_2 by truck would not provide a reasonable alternative to the Proposed Action. The large numbers of trucks, long distances involved, and the much greater costs inherent in this alternative would not offer reduced environmental or socioeconomic impacts nor offer other advantages.

2.4.2 Northern Alternative

The Northern alternative originally was examined via helicopter in an attempt to shorten the length of the pipeline. This alternative would deviate from the proposed route in the vicinity of MP 10, and would proceed east and northward to rejoin the proposed route in the vicinity of MP 83 (just south of the proposed I-25 crossing). This alternative would have shortened the Project length by approximately 17 miles.

Constructing the 20-inch-diameter pipeline segment along this route would result in several significant constructability concerns. The alternative route does not follow any existing utilities and is not within a designated utility corridor. The terrain along this alternative route is extremely rugged and would require special construction techniques for much of its length. The rugged terrain would be extremely difficult to reclaim/revegetate and would be prone to ongoing erosion.