2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROPOSED FACILITIES

Texas Gas proposes to construct, own, operate, and maintain two pipeline laterals and associated facilities in Arkansas and Mississippi. The Project would be constructed in two phases during an 8-month-long construction season in 2008. Phase I would consist of the western-most 66 miles of the Fayetteville Lateral, from Conway County to Bald Knob, Arkansas. Phase II would include: construction of the remaining 100 miles of the Fayetteville Lateral from White County, Arkansas, to the interconnect with Texas Gas's mainline in Coahoma County, Mississippi; the entire Greenville Lateral, including the Kosciusko 36-inch Tie-in Lateral and the Kosciusko 20-inch Tie-in Lateral; and the Kosciusko Compressor Station.

This section describes the proposed pipeline facilities, land requirements, construction procedures, construction schedule, environmental compliance and inspection monitoring, operation and maintenance procedures, and safety controls. Figure 2.1-1 shows the general location of the proposed Project. More detailed maps of the Project are in appendix B.

2.1.1 Pipeline Facilities: Fayetteville and Greenville Laterals

Texas Gas proposes to construct a total of about 263.4 miles of 36-inch-diameter natural gas pipeline in Conway, Faulkner, Cleburne, White, Woodruff, St. Francis, Lee, and Philips Counties, Arkansas, and Coahoma, Washington, Sunflower, Humphreys, Holmes, and Attala Counties, Mississippi. Texas Gas also would construct about 0.4 mile of 20-inch-diameter natural gas pipeline in Attala County, Mississippi. Table 2.1.1-1 lists the proposed Project pipelines in each affected county by milepost.

Fayetteville Lateral

The Fayetteville Lateral would parallel existing pipeline and utility corridors along about 56 percent (87.7 miles) of its proposed route in Arkansas, and about 100 percent (9 miles) of its proposed route in Mississippi. The Fayetteville Lateral pipeline would cross the Mississippi River near Helena, Arkansas, and continue to run parallel to an existing Texas Gas right-of-way to its terminus with the existing Texas Gas mainline in Coahoma County, Mississippi.

Greenville Lateral

The Greenville Lateral would create about 96.4 miles of new natural gas pipeline right-of-way, extending from Texas Gas's existing Greenville Compressor Station in Washington County, Mississippi, through Washington, Sunflower, Humphreys, and Holmes Counties to the southern portion of Attala County, Mississippi, where it would terminate at the new Kosciusko Compressor Station.

Kosciusko 36-inch Tie-in Lateral

The 0.8-mile-long Kosciusko 36-inch Tie-in Lateral would begin at the proposed, new Kosciusko Compressor Station, extend west to Niles Road and then follow Niles Road, trending generally south to tie-ins with a Gulf South pipeline and a Texas Eastern pipeline at MP 0.8.

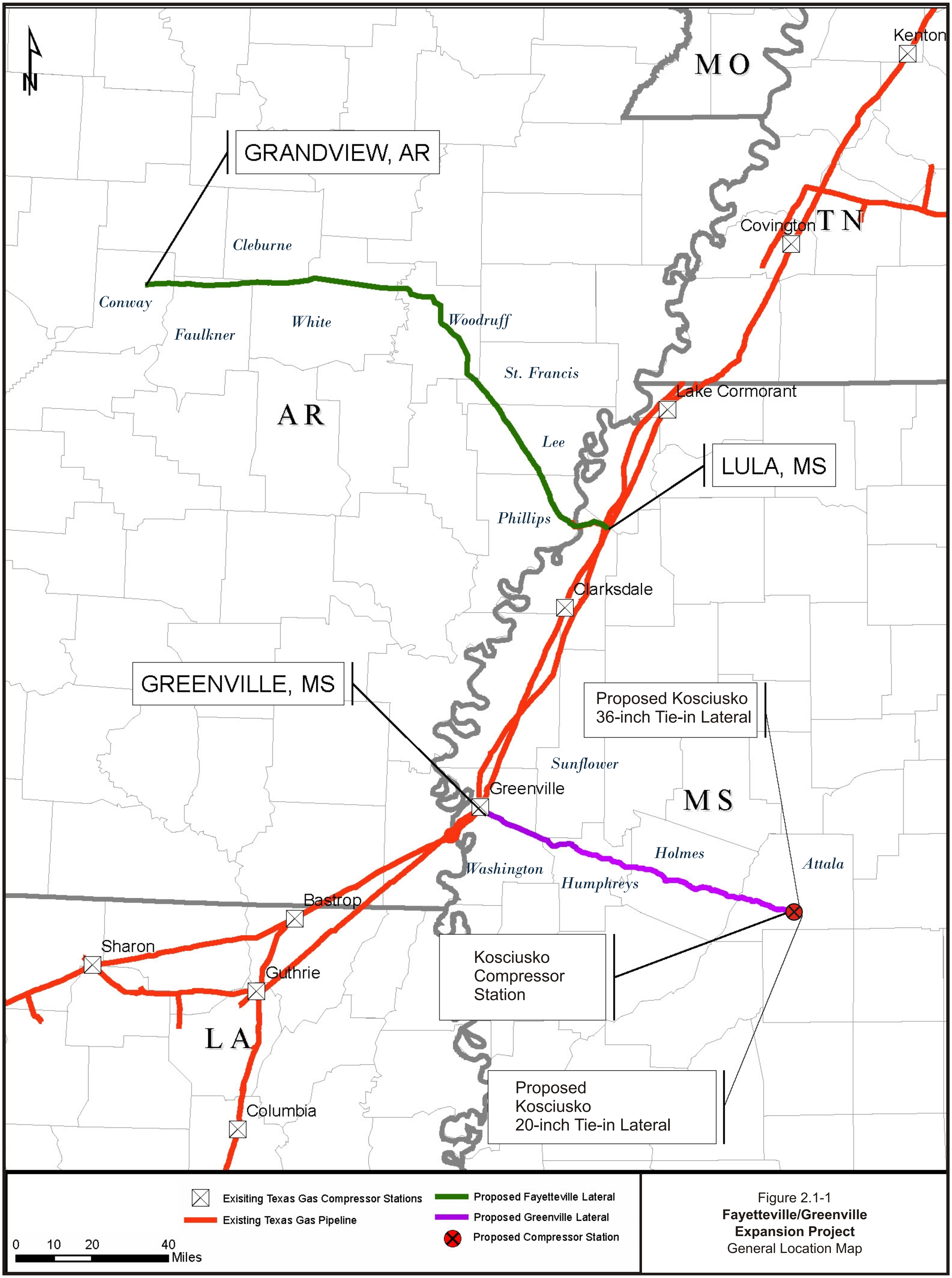


Figure 2.1-1
Fayetteville/Greenville Expansion Project
General Location Map

TABLE 2.1.1-1

Pipeline Facilities

Pipeline Segment	Diameter (inches)	Milepost From	Milepost To	Length (miles)	County, State
Fayetteville Lateral					
Steel Natural Gas Pipeline	36	0	7.8	7.8	Conway County, AR
	36	7.8	29.2	21.4	Faulkner County, AR
	36	29.2	41.1	11.9	White County, AR
	36	41.1	41.6	0.5	Cleburne County, AR
	36	41.6	42.5	0.9	White County, AR
	36	42.5	44.2	1.7	Cleburne County, AR
	36	44.2	69.6	25.4	White County, AR
	36	69.6	108.0	38.4	Woodruff County, AR
	36	108.0	116.5	8.5	St. Francis County, AR
	36	116.5	139.2	22.7	Lee County, AR
	36	139.2	157.7	18.5	Phillips County, AR
	36	157.7	166.2	8.5	Coahoma County, MS
Total Lateral Length				166.2	
Greenville Lateral					
Steel Natural Gas Pipeline	36	0.0	17.3	17.3	Washington County, MS
	36	17.3	20.1	2.8	Sunflower County, MS
	36	20.1	20.3	0.2	Washington County, MS
	36	20.3	46.1	25.8	Humphreys County, MS
	36	46.1	77.7	31.6	Holmes County, MS
	36	77.7	96.4	18.7	Attala County, MS
Total Lateral Length				**96.4**	
Total Mainline Pipeline Length				**262.6**	
Kosciusko 36-inch Tie-in Lateral					
Steel Natural Gas Pipeline	36	0.0	0.8	0.8	Attala County, MS
Total 36-inch Tie-in Length				**0.8**	
Kosciusko 20-inch Tie-in Lateral					
Steel Natural Gas Pipeline	20	0.0	0.4	0.4	Attala County, MS
Total Tie-in Length				**0.4**	
Total Tie-ins Pipeline Length				**1.2**	

Kosciusko 20-inch Tie-in Lateral

The 0.4-mile-long Kosciusko 20-inch Tie-in Lateral would begin at the tie-in with Gulf South and extend generally south-southeast to a tie-in with a Southern Natural pipeline.

2.1.2 Aboveground Facilities

The proposed aboveground facilities for the Project include one new compressor station, 29 metering and regulating (M&R) stations, 30 interconnects (tie-ins), 21 main line valves (MLVs), and three launchers and three receivers. Table 2.1.2-1 lists the proposed aboveground facilities by MP and county. Descriptions of the proposed facilities are provided in the following subsections.

Kosciusko Compressor Station

Texas Gas would construct a 10,650-hp compressor station at the eastern terminus of the Greenville Lateral. The Kosciusko Compressor Station would contain two Caterpillar 3612 engines driving Arial compressors (3,550 hp each) and two Caterpillar 3606 engines driving Arial compressors (1,775 hp each). This compressor station would be near Kosciusko, Attala County, Mississippi, and would occupy an irregularly shaped 65-acre area.

Meter and Regulation Stations

Each of the proposed M&R stations and tie-in interconnects to existing pipelines would include meter runs consisting of a custody-transfer flow meter, pressure regulator, isolation block valves, and associated instrumentation and controls to measure the flow of natural gas from the proposed new pipeline to the existing interconnecting pipeline. Texas Gas would construct a total of 29 M&R stations for the Project, 19 on the Fayetteville Lateral and 10 on the Greenville Lateral. The proposed M&R station locations are identified in table 2.1.2-1.

Main Line Valves, Launchers, and Receivers

MLVs segment a pipeline for safety, operational, and maintenance purposes, in accordance with U.S. Department of Transportation (DOT) regulations. MLVs are used to shut down gas flow in the pipeline and also allow for surface access to the pipeline. Texas Gas would install MLVs at the beginning and end of each line, and at intermediate locations as necessary to meet operational and federal regulatory requirements. A total of 21 MLVs would be installed, 11 on the Fayetteville Lateral and 10 on the Greenville Lateral (including two on the Kosciusko 36-inch Tie-in Lateral and one on the Kosciusko 20-inch Tie-in Lateral). All MLVs would be within the permanent rights-of-way. The proposed MLV locations are listed in table 2.1.2-1.

The MLVs would be installed on the buried pipeline, with the blowdown valve and manual valve operator extending aboveground within a fenced, gated, and locked area within the permanent pipeline right-of-way, either on their own or within an associated M&R station or launcher/receiver site. Each MLV would be remotely monitored and controlled from a central control facility via the Supervisory Control and Data Acquisition (SCADA) system.

TABLE 2.1.2-1

Aboveground Facilities

Type of Facility/Pipeline Lateral	Description	Milepost	County/State
M& R Stations			
Fayetteville Lateral			
	M&R Station and tie-in to Southwestern	0.0	Conway County, AR
	M&R Station and tie-in to Southwestern	3.1	Conway County, AR
	M&R Station and tie-in to Southwestern	6.7	Conway County, AR
	M&R Station and tie-in to Southwestern	9.4	Faulkner County, AR
	M&R Station and tie-in to Southwestern	13.4	Faulkner County, AR
	M&R Station and tie-in to Southwestern	16.5	Faulkner County, AR
	M&R Station and tie-in to Southwestern	19.6	Faulkner County, AR
	M&R Station and tie-in to Southwestern	23.7	Faulkner County, AR
	M&R Station and tie-in to Southwestern	28.4	Faulkner County, AR
	M&R Station and tie-in to Southwestern	32.8	White County, AR
	M&R Station and tie-in to Southwestern	35.9	White County, AR
	M&R Station and tie-in to Southwestern	39.2	White County, AR
	M&R Station and tie-in to CenterPoint Energy (CenterPoint)	45.9	White County, AR
	M&R Station and tie-in to Southwestern	50.4	White County, AR
	M&R Station and tie-in to Southwestern	55.5	White County, AR
	M&R Station and tie-in to Natural Gas Pipe Line Company of America (NGPL)	64.1	White County, AR
	M&R Station and tie-in to dual Mississippi River Transmission (MRT) pipelines	65.6	White County, AR
	M&R Station and tie-in to Texas Eastern	65.9	White County, AR
	M&R Station and tie-in to Texas Gas	166.2	Coahoma County, MS
Greenville Lateral			
	M&R Station and tie-in to Texas Gas	0.0	Washington County, MS
	M&R Station and tie-in to Tennessee	0.5	Washington County, MS
	M&R Station and tie-in to American Natural Resources	1.8	Washington County, MS
	M&R Station and tie-in to Trunkline	6.4	Washington County, MS
	M&R Station and tie-in to Columbia Gulf	28.7	Humphreys County, MS
	M&R Station and tie-in to Tennessee	29.8	Humphreys County, MS
	M&R station and tie-in to Gulf South (via Kosciusko 36-inch Tie-in Lateral)	96.4	Attala County, MS
	M&R Station and tie-in to Texas Eastern (via Kosciusko 36-inch Tie-in Lateral)	96.4	Attala County, MS
	M&R Station and tie-in to Southern Natural (via Kosciusko 20-inch Tie-in Lateral)	96.4	Attala County, MS
	M&R Station and tie-in to Texas Eastern	96.4	Attala County, MS

TABLE 2.1.2-1

Aboveground Facilities

Type of Facility/Pipeline Lateral	Description	Milepost	County/State
Launchers and Receivers			
Fayetteville Lateral			
	Launcher with MLV No. 1	0.0	Conway County, AR
	Receiver	66.0	White County, AR
	Launcher	66.0	White County
	Receiver at Texas Gas M&R Station	166.2	Coahoma County, MS
Greenville Lateral			
	Launcher at Texas Gas's existing Greenville Compressor Station	0.0	Washington County, MS
	Receiver at Texas Eastern Transmission M&R Station at Kosciusko Compressor Station	96.4	Attala County, MS
MLVs			
Fayetteville Lateral			
	MLV No. 1 with launcher	0.0	Conway County, AR
	MLV No. 2	19.6	Faulkner County, AR
	MLV No. 3	38.9	White County, AR
	MLV No. 4	54.2	White County, AR
	MLV No. 5	66.0	White County, AR
	MLV No. 6	85.4	Woodruff County, AR
	MLV No. 7	105.2	Woodruff County, AR
	MLV No. 8	120.2	Lee County, AR
	MLV No.9	136.0	Lee County, AR
	MLV No. 10	153.2	Phillips County, AR
	MLV No. 11 with receiver	166.2	Coahoma County, MS
Greenville Lateral			
	MLV No. 1 with launcher	0.0	Washington County, MS
	MLV No. 2 with Trunkline M&R station	6.4	Washington County, MS
	MLV No. 3	19.4	Sunflower County, MS
	MLV No. 4	29.8	Humphreys County, MS
	MLV No. 5	42.0	Humphreys County, MS
	MLV No. 6	54.0	Holmes County, MS
	MLV No. 7	66.1	Holmes County, MS
	MLV No. 8	73.0	Holmes County, MS
	MLV No. 9	81.8	Attala County, MS
	MLV No. 10	96.4	Attala County, MS
Compressor Station			
Greenville Lateral	10,650-hp Kosciusko Compressor Station	96.4	Attala County, MS

Launcher and receiver facilities would be used to send and receive internal inspection equipment (pigs) that travels through the pipeline. Texas Gas would construct two launchers and two receivers on the Fayetteville Lateral and one launcher and one receiver on the Greenville Lateral (see table 2.1.2-1). A launcher and receiver would be installed at the beginning and end of each lateral, and a launcher and receiver would be installed at MP 66.0 of the Fayetteville Lateral. A distillate storage tank would be installed at each of the three receiver locations to collect any fluids that might be discharged from the pipeline after testing for disposal at appropriate sites.

To the extent practicable, the aboveground facilities would be constructed near existing roads. Texas Gas would construct permanent access roads from the existing roads to the aboveground facility as part of facility construction.

2.2 LAND REQUIREMENTS

Construction of the Project would require a total of 5,057.2 acres of land, including the pipeline construction rights-of-way (3,199.6 acres), extra workspaces (635.0 acres), aboveground facilities (113.5 acres), access roads (162.5 acres), and temporary pipe storage and contractor yards (946.6 acres). Table 2.2-1 summarizes the land requirements for the Project. A detailed description of the land uses that would be affected by construction and operation of the Project is presented in section 4.8.

TABLE 2.2-1

Summary of Land Requirements

Facility	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Fayetteville Lateral	2,465.4	1,009.1
Greenville Lateral	1,353.9	586.2
Kosciusko 36-inch Tie-in Lateral	10.4	4.9
Kosciusko 20-inch Tie-in Lateral	4.9	2.4
Aboveground facilities	113.5	113.5
Pipe storage and contractor yards	946.6	0.0
Access roads	162.5	15.1
TOTAL: Project	**5,057.2**	**1,721.6**

Of the 5,057.2 acres of land required for construction, about 1,731.2 acres would be required for operation. Of this total, about 1,602.6 acres would be required for the permanent pipeline rights-of-way, 113.5 acres would be required for operation of the aboveground facilities, and 15.1 acres would be required for new access roads.

About 3,326.0 acres would be affected only during construction of the Project. Following construction, they would be restored or allowed to return to their preconstruction cover and land use.

2.2.1 Pipeline Facilities

2.2.1.1 Rights-of-Way and Temporary Workspaces

The Fayetteville Lateral would parallel existing pipeline and utility corridors along about 56 percent (87.7 miles) of its proposed route in Arkansas and about 100 percent (9 miles) of its proposed route in Mississippi. The Greenville Lateral would create about 96.4 miles of new natural gas pipeline right-of-way from the existing Greenville Compressor Station in Washington County, Mississippi, through Washington, Sunflower, Humphreys, and Holmes Counties to the southern portion of Attala County, Mississippi.

Texas Gas would generally use a 100-foot-wide construction right-of-way. A 75-foot-wide construction right-of-way would be used to install the pipeline through wetlands. Texas Gas would require a 150-foot-wide construction corridor along the path of all proposed horizontal directional drills (HDDs) on both the Fayetteville and Greenville Laterals. However, because the HDD method involves installation of the pipeline(s) by drilling beneath a waterbody or land surface, there would be minimal land disturbance along the path of the HDD; only small areas along the edges of the 150-foot-wide construction right-of-way would be disturbed for placement of the electric grid guide wires used to guide the drill.

The typical 100-foot-wide pipeline construction right-of-way in upland areas would be divided into a 65-foot-wide working side and a 35-foot-wide spoil side. Figure 2.2.1-1 is a cross section that shows the typical construction and permanent rights-of-way that would be used for the Fayetteville and Greenville Laterals. Actual dimensions and the configuration (e.g., spoil storage, equipment travel lane) within the construction right-of-way may vary depending on site-specific conditions at the time of construction and construction methods used. Where the Project would be collocated adjacent to an existing pipeline, the construction right-of-way would be no closer than 15 feet from the existing pipeline to keep construction equipment away from the operating pipeline. Texas Gas would use a slightly different workspace configuration where the Project would be collocated with the existing CenterPoint pipeline right-of-way and with gathering lines. Where the Project would be collocated with the CenterPoint pipeline, Texas Gas would use a 40-foot-wide working side and a 60-foot-wide spoil side construction right-of-way configuration, which would overlap the existing pipeline easement by 10 feet. The overlapped areas would be used for temporary workspace. Where the Project would be collocated with gathering lines, Texas Gas would use a 45-foot-wide working side and a 55-foot-wide spoil side construction right-of-way configuration. This right-of-way configuration would overlap the existing gathering pipeline easement by 5 feet. Again, the overlapped area would be used for temporary workspace. Pipeline construction methods are described in more detail in section 2.5.

Additional temporary workspace would be required to safely install the pipeline in rugged terrain. All of the identified areas with rugged terrain would be along the Fayetteville Lateral, and table 2.2.1-1 lists them by milepost. The land requirement due to construction through rugged terrain would add about 8.8 acres of temporary impact.[1] When constructing the Project through agricultural land, Texas Gas would require an additional 20 feet of temporary workspace along the construction right-of-way, which it would use for full topsoil segregation in areas of rice production. See section 4.2 for additional information about construction through agricultural land. Texas Gas identified a total of 635.0 acres of temporary extra workspace that would be required for construction at wetland, waterbody, HDD, foreign pipeline, and road/railroad crossings; and for topsoil segregation, sharp bends in the pipeline, truck turnarounds, and staging and fabrication. The locations, sizes, and land use of the identified temporary extra

[1] The land requirement for extra workspaces in rugged terrain is included in the total land requirement for the Project.

workspaces and staging areas are listed in table C-1 in appendix C and are shown on the Project location maps in appendix B.

Following construction, Texas Gas would maintain a permanent 50-foot-wide right-of-way for operation of the pipeline. Generally, there would be a 50-foot separation between the proposed pipeline and any adjacent foreign pipeline. About 1,009.1 acres of land for the Fayetteville Lateral and 593.5 acres of land for the Greenville Lateral and associated tie-ins would be required for the permanent right-of-way.

TABLE 2.2.1-1

Land Requirements for Rugged Terrain Crossings

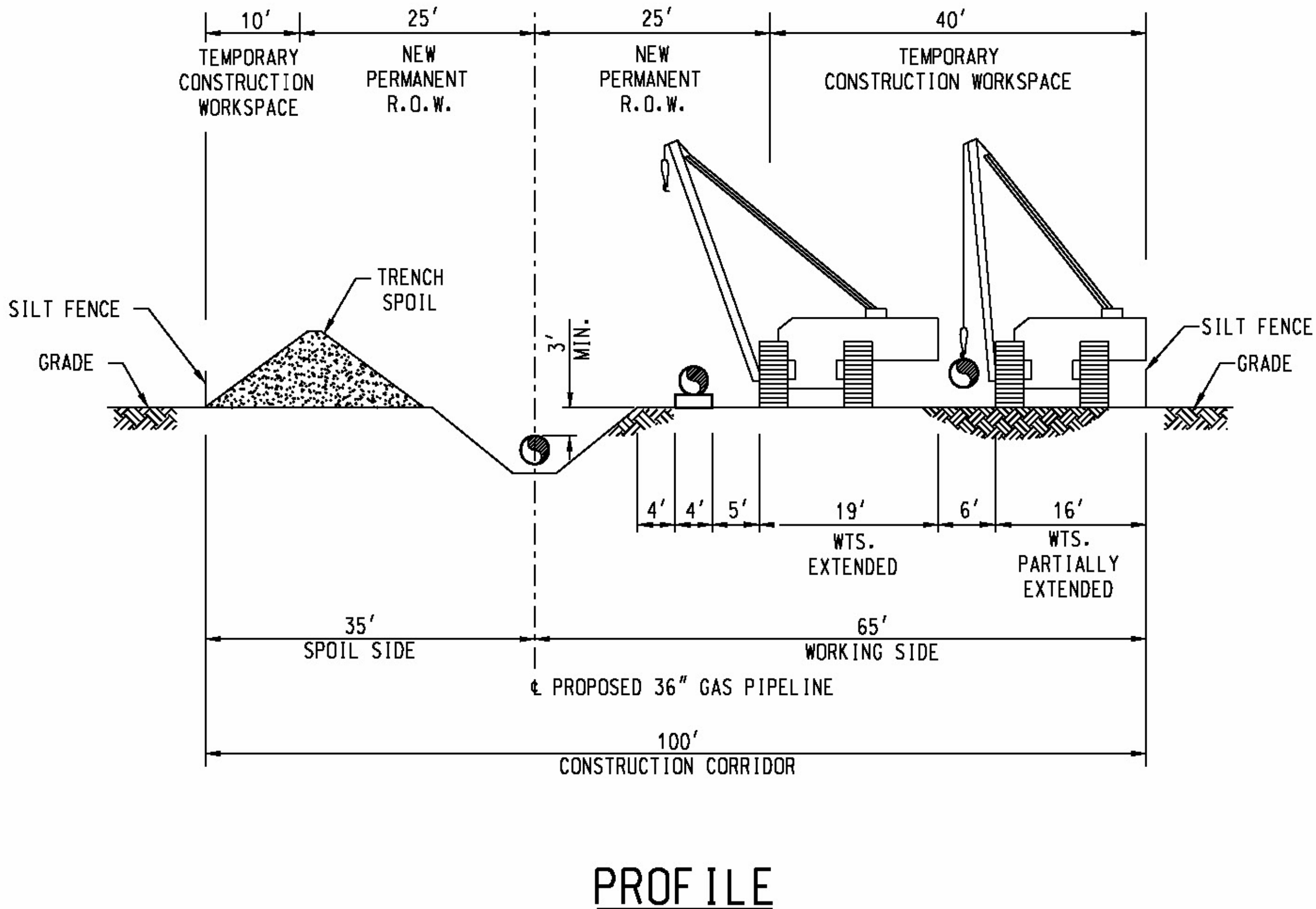
County, State	Milepost Range	Approximate Length (feet)	Additional Construction Right-of-way Width	Additional Temporary Workspace Acreage
Fayetteville Lateral				
Conway, AR	4.3 to 4.8	2,500	25	1.4
Conway, AR	7.1 to 7.3	950	25	0.5
Celburne, AR	41.7 to 41.7	300	50	0.3
Celburne, AR	42.6 to 43.1	2,350	25	1.3
White, AR	44.1 to 44.2	450	25	0.3
White, AR	44.3 to 44.4	525	25	0.3
White, AR	56.0 to 56.8	850	25	0.5
White, AR	59.8 to 60.3	2,340	25	1.3
White, AR	61.4 to 61.6	1,150	25	0.7
White, AR	62.2 to 62.3	430	25	0.2
White, AR	62.4 to 62.4	100	25	0.1
White, AR	62.4 to 62.5	300	50	0.3
White, AR	62.5 to 62.8	1,625	25	0.9
White, AR	63.1 to 63.2	250	50	0.3
White, AR	63.2 to 63.2	200	25	0.1
White, AR	63.2 to 63.3	600	25	0.3
Total		**14,920**		**8.8**

2.2.1.2 Access Roads

Texas Gas would use 160 access roads with a total length of about 59.9 miles to provide access to the construction right-of-way for construction materials and equipment. All access roads proposed by Texas Gas would be existing dirt, gravel, or paved roads, although some would need modifications. The existing access roads may be improved by grading or adding gravel to support movement of construction equipment and materials, as required. Following construction, all temporary access roads would, at a minimum, be returned to their preconstruction condition. Use of the access roads would temporarily affect about 162.5 acres of land during construction. Of that amount, about 15.1 acres of access roads would be retained for operation of the Project. The proposed access roads are shown on the Project location maps in appendix B.

2.2.1.3 Pipe Storage/Contractor Yards

Texas Gas identifies 40 sites that it would use temporarily as pipe storage yards, contractor's office, and equipment/tool room trailers; construction equipment and employee parking areas; equipment laydown, warehouse, and maintenance areas; and staging areas for other construction activities. These sites would range in size from about 0.2 to 109.0 acres and total about 946.6 acres. Depending upon site conditions and their current use, some surface grading, drainage improvements, placement of surface materials (e.g., crushed rock), and/or construction of internal roadways may be required. The location of each potential



NOT TO SCALE

Figure 2.2.1-1
Fayetteville/Greenville Expansion Project
Typical 36-inch-Diameter Pipe - Cross Section
Without Topsoil Segregation

yard is shown on the Project location maps in appendix B. All sites would, at a minimum, be returned to their preconstruction land use, ground cover, and condition following construction.

2.2.2 Aboveground Facilities

Construction and operation of the Kosciusko Compressor Station, M&R stations/interconnect sites, MLVs, and launchers/receivers would require about 113.5 acres of land. The compressor station would occupy about 65.0 acres; the remaining acres would be occupied by M&R stations. The sizes of M&R stations range from 0.9 acre to 2.6 acres. All MLVs and launchers/receivers would be located within the pipeline right-of-way and thus are not included in the 113.5 acres of land required for construction and operation of aboveground facilities. Each MLV and each launcher/receiver would occupy less than 0.1 acre.

2.3 CONSTRUCTION SCHEDULE

Texas Gas proposes to construct the pipeline facilities in two phases. Phase I would include construction of the first 66 miles of the Fayetteville Lateral and related facilities from Conway County to the Bald Knob area of White County, Arkansas. Phase II would include construction of the remaining 100 miles of the Fayetteville Lateral from White County to Coahoma County, Mississippi, the entire Greenville Lateral and associated tie-in laterals, and the Kosciusko Compressor Station. Texas Gas proposes beginning construction of both Phases I and II in June 2008. However, Phase I would be placed in service by August 1, 2008, and Phase II would be placed in service by January 1, 2009. Texas Gas would be required to obtain written approval to begin service on each segment of the Project. Therefore, **we recommend that:**

- **Texas Gas must receive written authorization from the Director of Office of Energy Projects (OEP) before commencing service on each pipeline segment. Such authorization would be granted only following a demonstration that rehabilitation and restoration of the Project area is proceeding satisfactorily.**

2.4 ENVIRONMENTAL COMPLIANCE AND MITIGATION MONITORING

To ensure that construction of the proposed facilities would comply with mitigation measures identified in Texas Gas's application, the FERC Certificate, and other permits, Texas Gas would employ at least one Environmental Inspector (EI) on each construction spread during construction and restoration. EIs would report to the Chief Inspector (CI) who would have overall authority over construction, but would have peer status with all other activity inspectors. EIs would have the authority to stop activities that violate the environmental conditions of the FERC Certificate, other permits, or landowner requirements, and to order appropriate corrective action. At a minimum, the EIs would be responsible for:

- ensuring and documenting compliance with the requirements of our Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures), the Stormwater Pollution Prevention Plan (SWPPP), the Spill Prevention and Countermeasure Plan (SPCC), the best management practices (BMP), the Hydrostatic Test Plan, the environmental conditions of the Certificate, the mitigation measures proposed by Texas Gas (as approved and/or modified by the Certificate), other environmental permits and approvals, and environmental requirements in landowner easement agreements;

- identifying, documenting, and overseeing corrective actions as necessary to bring an activity back into compliance;

- verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;

- verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, noxious weed infestations, and areas with special requirements along the construction work area and confirming that the appropriate resource monitoring is being conducted to protect these areas;

- verifying that equipment and vehicles have been cleaned prior to arrival at the work site, and are cleaned after working in areas of known noxious weed infestations before moving on to other areas;

- identifying erosion/sediment control and soil stabilization needs in all areas;

- ensuring that the location of dewatering structures and slope breakers would not direct water into known cultural resources sites or locations of sensitive species;

- verifying that hydrostatic test dewatering structures are located at approved discharge sites;

- verifying that trench and hydrostatic test dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition is occurring, the dewatering activity would be stopped and the design of the discharge would be changed to prevent recurrence;

- ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;

- advising the CI when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive rutting;

- documenting that materials and wastes are properly handled, stored, transported, and disposed of in accordance with the SPCC;

- documenting that spills are controlled, contained, and cleaned up in accordance with the SPCC;

- ensuring restoration of contours and topsoil;

- verifying that the soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;

- determining the need for and ensuring that temporary erosion controls are properly installed as necessary to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;

- documenting that seeding, fertilizing, mulching, and tree and shrub planting are carried out in accordance with any required reclamation plan;

- inspecting and ensuring the maintenance of temporary erosion control measures at least:

- on a daily basis in areas of active construction or equipment operation;
- on a weekly basis in areas with no construction or equipment operation; and
- within 24 hours of each 0.5 inch of rainfall;

- ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification;
- keeping records of compliance with the environmental conditions of the FERC Certificate, and the mitigation measures proposed by Texas Gas in its FERC application, and other federal, state, or local environmental permits during active construction and restoration; and
- identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

After construction, Texas Gas would conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation. Revegetation would be considered successful in agricultural areas if crop yields are similar to adjacent undisturbed portions of the same field. In other areas, revegetation would be considered successful if, upon visual survey, the density and cover of non-nuisance vegetation is similar in density and cover to adjacent undisturbed lands. In all cases, construction debris must be removed (unless requested otherwise by the landowner or land management agency) and proper drainage must be restored. Texas Gas would submit quarterly reports to the FERC for at least two years following construction documenting any problems identified by Texas Gas or landowners and describing the corrective actions taken to remedy those problems.

For a period of at least three years after construction, Texas Gas would monitor the proposed Project area annually for noxious weed infestations. Areas where noxious weeds are noted would be further evaluated to determine if remedial action or treatment is necessary. Treatment may involve mechanical means (e.g., mowing or disking) and/or herbicide application. Treatment methods would be based on site-specific conditions and would be coordinated with the landowner and appropriate federal, state, and local regulatory authorities.

After construction, the FERC would continue to conduct oversight inspection and monitoring. If it is determined that any of the proposed monitoring time frames are not adequate to assess the success of restoration, Texas Gas would be required to extend its post-construction monitoring programs.

As the lead federal agency for the proposed Project, the FERC may impose conditions on any Certificate granted for the proposed Project. These conditions could include additional requirements and mitigation measures identified in this EIS to minimize the environmental impact that would result from the construction of the proposed Project (see section 5.0). We would recommend to the Commission that these additional requirements and mitigation measures (offset with bold type in the text) be included as specific conditions to any approving Certificate issued for the proposed Project. If it approves the proposed Project, the FERC would require Texas Gas to implement the construction procedures and mitigation measures that Texas Gas has proposed as part of the Project unless specifically modified by other Certificate conditions.

We recognize that during or after construction, issues or complaints may develop that were not addressed during the environmental proceedings at the Commission, and it is imperative that landowners continue to have an avenue to contact Texas Gas's representatives. We are interested in ensuring that landowner issues and complaints received during construction are resolved in a timely and efficient manner (if the proposed Project is approved). Therefore, **we recommend that:**

- **Texas Gas develop and implement an environmental complaint resolution procedure. The procedure should provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the Project and restoration of the right-of-way. Prior to construction, Texas Gas should mail the complaint procedures to each landowner whose property would be crossed by the Project.**

  a. In its letter to affected landowners, Texas Gas should:

  (1) provide a local contact that the landowners should call first with their concerns; the letter should indicate how soon a landowner should expect a response;

  (2) instruct the landowners that if they are not satisfied with the response, they should call Texas Gas's Hotline; the letter should indicate how soon to expect a response; and

  (3) instruct the landowners that if they are still not satisfied with the response from Texas Gas's Hotline, they should contact the Commission's Enforcement Hotline at (888) 889-8030, or at hotline@ferc.gov.

  b. In addition, Texas Gas should include in its weekly status report a copy of a table that contains the following information for each problem/concern:

  (1) the date of the call;

  (2) the identification number from the certificated alignment sheets of the affected property and approximate location by MP;

  (3) the description of the problem/concern; and

  (4) an explanation of how and when the problem was resolved, would be resolved, or why it has not been resolved.

2.5 CONSTRUCTION PROCEDURES

This section describes the general construction procedures proposed by Texas Gas for construction of the pipeline. Section 4 contains more detailed information about proposed construction, mitigation, and restoration procedures as well as additional measures that we are recommending to mitigate environmental impacts on specific resources.

2.5.1 Pipeline Facilities

The proposed pipeline would be designed, constructed, operated, and maintained in accordance with federal safety standards that are intended to ensure adequate protection for the public and to prevent natural gas pipeline accidents or failures. These regulations include DOT regulations in 49 CFR Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards. Among other design standards, 49 CFR Part 192 specifies pipeline material selection; minimum design requirements; protection from internal, external, and atmospheric corrosion; and qualification procedures for welders and operations personnel. In addition, Texas Gas would comply with the siting and maintenance requirements in 18 CFR Part 380.15, Siting and Maintenance Requirements, and other applicable federal and state regulations.

2.5.1.1 General Pipeline Construction Techniques

Figure 2.5.1-1 shows the typical steps of upland pipeline construction. Standard pipeline construction proceeds in the manner of an outdoor assembly line comprising specific activities that make up the linear construction sequence. These sequenced operations include survey and staking of the right-of-way, clearing and grading, trenching, pipe stringing and bending, welding and coating, lowering-in and backfilling, hydrostatic testing, and cleanup.

In addition to the standard pipeline construction methods described below, Texas Gas would use special construction techniques where warranted by site-specific conditions. These special techniques would be used for crossing waterbodies, wetlands, agricultural areas, roads, railroads, foreign pipelines, and residential and commercial/industrial areas (see section 2.5.1.2).

Survey and Staking

Before beginning construction, a civil survey crew would stake the outside limits of the right-of-way, the centerline location of the pipeline(s), drainage centerlines and elevations, highway and railroad crossings, and any temporary extra workspaces such as laydown areas or at stream crossings. Arkansas and Mississippi One Call systems would be contacted, and underground utilities (i.e., cables, conduits, and pipelines) would be located and flagged. Affected landowners would be notified prior to surveying and staking of the construction right-of-way.

Clearing and Grading

The construction right-of-way and additional temporary work areas would be cleared of shrubs and trees and other obstructions. Timber would only be removed when absolutely necessary for construction purposes. Timber and other vegetation debris may be chipped for use as erosion-control mulch, burned, or otherwise disposed of in accordance with applicable state and local regulations and landowner agreements. Fences would be cut and braced along the right-of-way, and temporary gates would be installed to control livestock and limit public access.

The right-of-way would then be graded where necessary to create a reasonably level working surface to allow safe passage of construction equipment and materials. Grading would not take place in wetlands unless topographic or other features make the right-of-way unsafe for construction equipment. Where applicable, topsoil would be stockpiled separately from excavated subsoil. Conserved topsoil would be stockpiled along one side of the right-of-way, allowing the other side to be used for access, material transport, and pipe assembly. Temporary erosion controls would be installed immediately after initial disturbance of the soil to minimize erosion and would be maintained throughout construction, consistent with our Plan.

Blasting may be required for grading and trenching in areas where bedrock is shallow and where mechanical excavation or rock-trenching methods are inadequate. See section 4.1 for additional information.

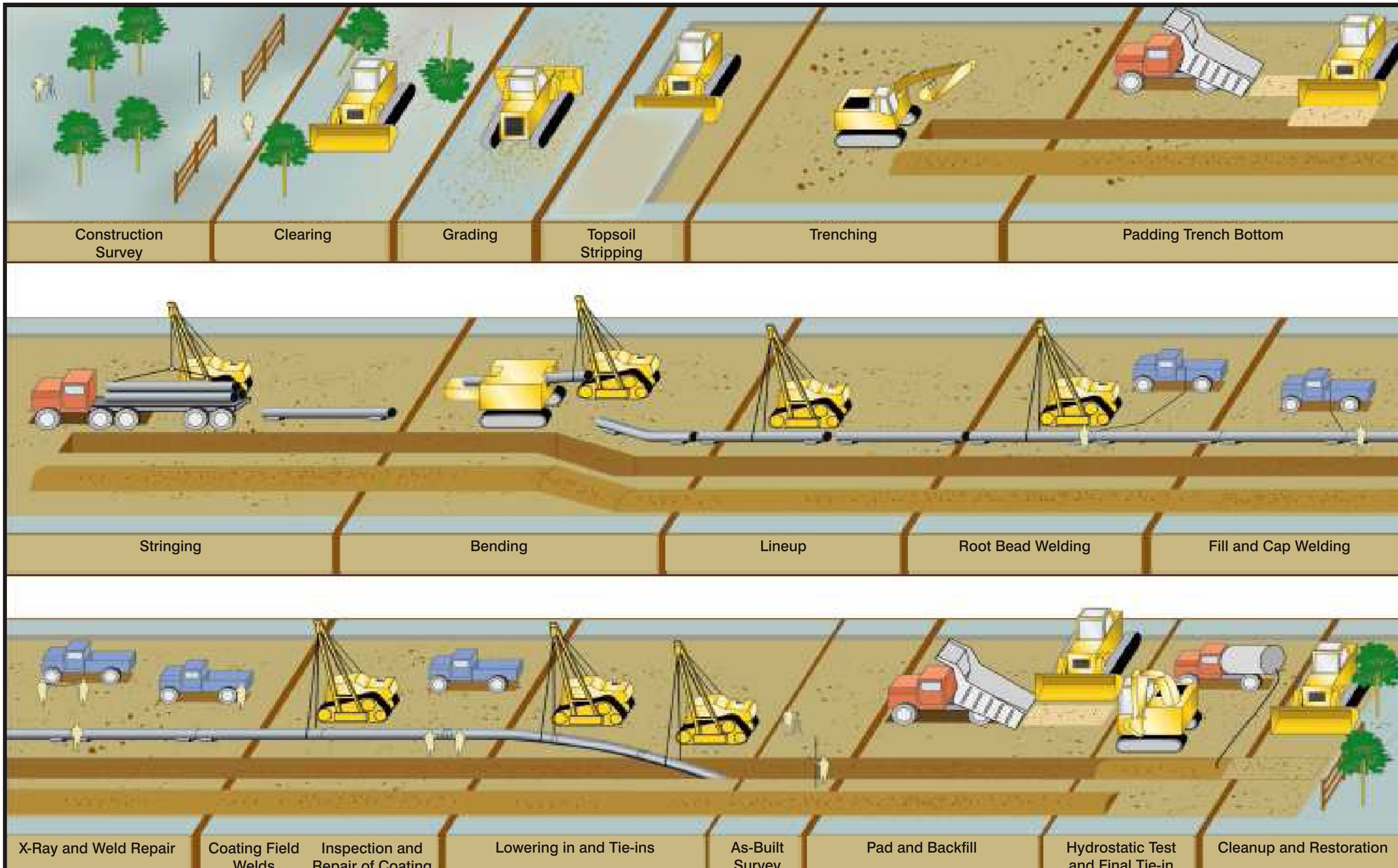


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Figure 2.5.1-1

Fayetteville/Greenville Expansion Project

Typical Upland Pipeline Construction Sequence

Trenching

The pipeline trench would be excavated with a rotary trenching machine, a track-mounted backhoe, or similar equipment. The trench would be excavated at least 12 inches wider than the diameter of the pipe, or a minimum of 48 inches for the 36-inch-diameter pipelines. The sides of the trench would be sloped (for safety), with the top of the trench up to 20 feet across, depending upon the stability of the native soils. The trench would be excavated to a sufficient depth to allow a minimum of 3 feet of soil cover between the top of the pipe and the final land surface after backfilling. Excavated soils would be stockpiled along the right-of-way on the side of the trench away from the construction traffic and pipe assembly area.

Where the new pipeline right-of-way would be collocated adjacent to an existing pipeline right-of-way, the spoil would be placed on the same side of the trench as, but not directly over, the existing pipeline to keep equipment off the operating pipeline. In areas where topsoil stripping is required, the topsoil and subsoil would be stored in separate windrows on the construction right-of-way and would be prevented from mixing. The landowner would be offered the option of whether to segregate the topsoil across the full width for the construction right-of-way, or to segregate just the ditch and spoil-side topsoil.

Stringing and Bending

Steel pipe for the pipeline would be procured in 40-foot and 80-foot lengths, or "joints," protected with an epoxy coating applied at the factory (the beveled ends would be left uncoated for welding followed by field coating) and shipped to strategically located storage areas, or pipe yards. The individual joints would be transported to the right-of-way by truck and unloaded by small portable cranes and/or side-boom tractors that would place the joints along the excavated trench. In upland areas, the pipe would be placed along the excavated trench in a single, continuous line, easily accessible to the construction personnel on the "working" side of the trench, opposite the "spoil" side. At waterbody and wetland crossings, the amount of pipe required to span the waterbody or wetland would be stockpiled in temporary workspaces at least 50 feet from the waterbody or wetland, as specified in our Procedures. Where bending is required to allow the pipe to follow natural grade and direction changes, a track-mounted hydraulic bending machine would bend the individual joints of pipe to the desired angle. In certain areas, prefabricated fittings would be used where field bending is not practicable.

Welding and Coating

After stringing and bending are complete, the pipe joints would be aligned, welded together, and placed on temporary supports along the edge of the trench. The ends would be carefully aligned and welded together using multiple passes, which would provide for a full-penetration weld. Only qualified welders would be permitted to perform the welding. Welders would be qualified according to applicable American Welding Society (AWS), American Society of Mechanical Engineers (ASME), American Petroleum Institute (API) and DOT standards. All welds would be inspected, both visually and radiographically, for integrity, and any welds that do not meet the design strength requirement would be repaired or cut out and rewelded. Following welding, the previously uncoated ends of the pipe at the joints would be cleaned and coated with epoxy. The coating on the completed pipe section would then be inspected, and any damaged areas would be repaired.

Lowering-in and Backfilling

After welding and coating are completed, the pipe section would be lifted off the temporary supports and lowered into the trench by side-boom tractors. Prior to lowering the pipe, the trench would be inspected to ensure that it is free of rocks and other debris that could damage the pipe or the coating, and the pipe and trench would be inspected to ensure that the pipe and trench configurations are compatible. In rocky areas, if the bottom is not smooth, a layer of soil may be placed on the bottom of the trench to protect the pipe. Foreign pipelines would typically be crossed by installing the proposed pipeline under the foreign pipeline. Concrete-coated pipe would be used, if required, for negative buoyancy in saturated soils. Bladed equipment or backhoes would be used to push the excavated material back into the trench. No construction debris, including wooden supports, welding rods, containers, brush, trees, or refuse of any kind, would be permitted in the backfill. Where the previously excavated material contains large rocks or other materials that could damage the pipe or coating, clean fill or protective coating would be placed around the pipe prior to backfilling. Segregated topsoil would be placed after backfilling the trench with subsoil. Following backfilling in open land or specified areas, a small crown of material would be left over the pipeline to allow for any future soil settling that might occur. In upland areas, excess soil would be distributed evenly on the right-of-way, while maintaining pre-construction contours.

Hydrostatic Testing

After backfilling, the pipeline would be hydrostatically tested in accordance with DOT Office of Pipeline Safety requirements identified in 49 CFR Part 192. Prior to being placed into service, test segments of the pipeline would be capped and filled with water, and the water would be pressurized and held for a minimum of 8 hours. If a leak or break in the line were to occur during testing, that section of pipeline would be repaired and retested until DOT specifications are met.

Upon completion of the test in one segment of pipe, the water may be pumped to the next pipe segment for testing or discharged. After testing is completed, the test water would be discharged through an energy-dissipating device and returned to the original source or as otherwise directed in compliance with the NPDES Permit conditions. Test water would not be discharged directly into surface waters. Once a segment of pipe has been successfully tested and dried, the test cap and manifold would be removed and the pipe would be connected to the remainder of the pipeline. Hydrostatic test water for testing the pipes within the new Kosciusko Compressor Station and the pipe modifications within the existing Greenville Compressor Station would be obtained from nearby municipalities. Test water would contact only new pipe. No chemicals would be added to the test water, and no desiccant or chemical additives would be used to dry the pipe. Texas Gas would implement section VII of our Procedures regarding hydrostatic testing, as well as any specifications in individual state permit guidelines to minimize impacts related to water withdrawal and discharge. See section 4.3 for additional information about hydrostatic testing for the Project.

Cleanup/Restoration

Post-construction restoration activities would be performed in accordance with our Plan and Procedures. After the segment of pipe has been installed, backfilled, and successfully tested, the right-of-way, temporary extra workspaces, and other disturbed areas would be finish-graded to original contours and construction debris would be disposed of properly. Permanent soil stabilization efforts would include revegetation of all previously vegetated areas that were disturbed by construction. In agricultural areas, compacted subsoil would be disked, and the segregated topsoil would be returned to its original horizon. Temporary and permanent erosion and sediment control measures, including silt fencing, diversion terraces, and vegetation, would be installed at that time. Private and public property, such as fences, gates, driveways, and roads, would be restored to original or better condition.

Active cropland may be left unseeded at the request of the landowner if preparation of the ground for planting is imminent following construction. Pasture would be reseeded with a similar species or mixture. Residential and commercial lawns would be reseeded or sodded, depending upon the original grass variety. Shrubs and small trees on residential properties would be temporarily transplanted and replaced, where practicable and where allowed relative to the permanent right-of-way. Forested areas would be allowed to recover naturally, except that no trees would be allowed to grow within the 50-foot-wide permanent pipeline right-of-way in upland areas to facilitate pipeline inspections.

Post-Construction Monitoring

The revegetation success would be monitored by Texas Gas. Revegetation in non-agricultural areas would be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation would be considered successful if crop yields are similar to adjacent undisturbed portions of the same field. Texas Gas would utilize reseeding, fertilizing, and other measures until a cover equivalent to similar adjacent areas is achieved. Temporary and interim erosion control measures would be removed at that time.

2.5.1.2 Special Construction Techniques

Areas where specialized construction techniques would be used include the crossings of agricultural areas, waterbodies, wetlands, roads/railroads, foreign pipelines, and residential or commercial/industrial areas. Texas Gas would use specialized construction techniques to cross one or a combination of several of these areas, as described below. Most waterbodies would be crossed using the open cut method. Most major and sensitive waterbodies would be crossed using the HDD method. See section 4.3 for further information about waterbody crossing methods and section 4.4 for further information about crossing wetlands. All waterbody and wetland crossings would be constructed in accordance with our Procedures.

Agricultural Areas

Topsoil would be conserved in actively cultivated and rotated cropland, improved pastureland, non-saturated wetlands, and residential areas. Topsoil would be conserved in pastures if requested by the landowner. A maximum of 12 inches of topsoil would be segregated in these areas, as well as in other areas at the specific request of the landowner or land management agency. The topsoil and subsoil would be temporarily stockpiled in separate windrows within the construction right-of-way, and the topsoil would not be allowed to mix with subsoil. Where the topsoil is less than 12 inches deep, the actual depth of the topsoil would be removed and segregated.

Rock would not be used as backfill in rotated or permanent cropland. The depth of the trench would vary with the diameter of the pipeline, but in all cases it would be sufficiently deep to allow for at least 3 feet of cover on top of the pipe. In actively or previously tilled land and pasture, Texas Gas would leave at least 4 feet of cover on top of the pipe. Texas Gas would consult with agricultural land owners or tenants to assess if additional depth of burial for the pipeline would be required due to certain agricultural practices such as deep tilling. If needed, Texas Gas would install the pipeline at greater depth.

Texas Gas would consult with landowners before performing construction through rice fields to time construction so as to cause the least interference with flooding of these areas. Texas Gas also would request landowners not to flood the fields through which construction is planned. This would allow sufficient time for the fields to dry so that Texas Gas would be able to use conventional construction methods through them. Texas Gas states that any irrigation ditches that are dry at the time of construction would be open cut, then repaired to the satisfaction of the landowner. Any irrigation ditches that have water flowing at the time of construction would be flumed to maintain water flow when they are crossed. After construction activities are completed, all levees, ditches, contours, and grade would be repaired and/or restored to original condition.

Texas Gas states it would compensate landowners for crop loss when the land is out of production during construction and for a time following restoration according to individual agreements. Also, Texas Gas would enter into specific agreements with landowners with precision-leveled fields. These agreements would specify that the landowner would be compensated to restore these fields following construction.

Waterbodies

Texas Gas would use one of four methods to cross waterbodies along the proposed pipeline route: conventional open-cut, flume, dam-and-pump, or HDD. Texas Gas anticipates using the open-cut method for all ephemeral and intermittent waterbodies and most perennial waterbodies, unless precluded by engineering considerations or environmental sensitivities and associated regulatory requirements.

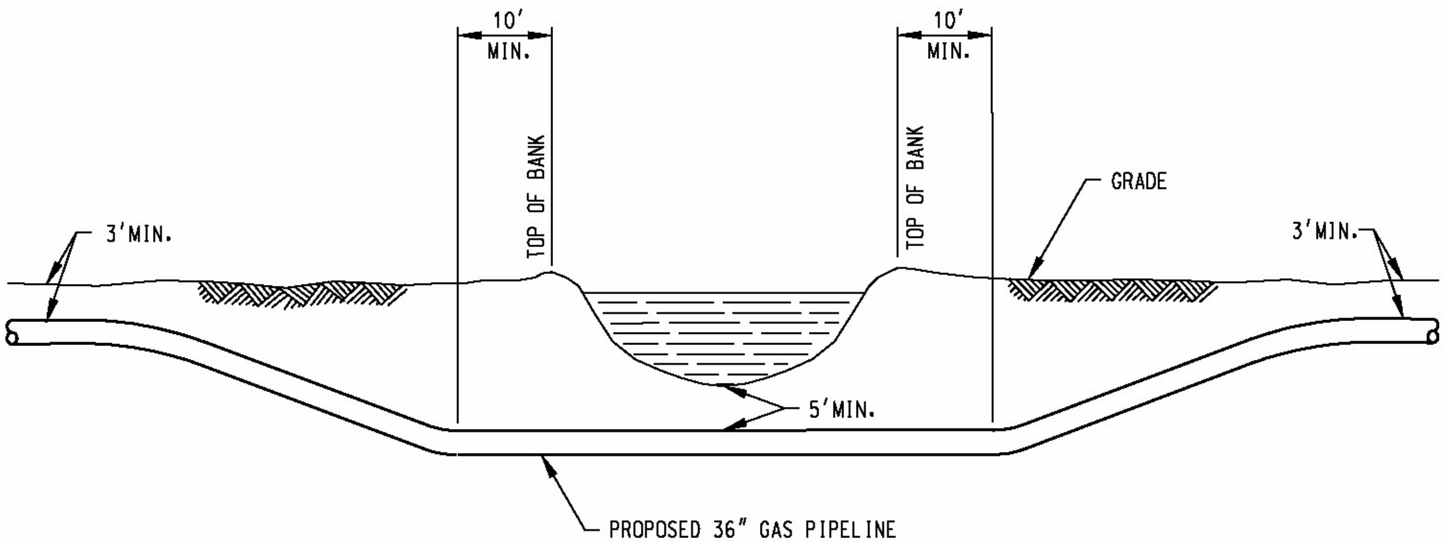
For certain environmentally sensitive crossings and for some minor (10 feet wide or less) and smaller intermediate (10 to 100 feet wide) crossings, the dam-and-pump or flume dry waterbody crossing methods rather than the conventional open-cut method may be feasible. These methods isolate the construction workspaces from the water flow, provide for continuous flow, and minimize downstream sedimentation and turbidity. Texas Gas anticipates using the HDD method at selected major (greater than 100 feet wide) waterbodies and other locations where environmental concerns favor the use of this technique.

Figure 2.5.1-2 shows a cross-section of a typical waterbody crossing. A description of each waterbody crossing method is provided below.

Following construction, waterbodies would be restored in a manner consistent with our Procedures. For open-cut crossings, waterbody banks would be stabilized and temporary sediment barriers would be installed within 24 hours of completing in-stream construction activities. For dry-ditch crossings, streambed and bank stabilization would be completed before returning flow to the waterbody channel. All waterbody banks would be returned to preconstruction contours or to a stable angle of repose. All disturbed riparian areas would be revegetated with conservation grasses and legumes or native plant species, preferably woody species. Permanent slope breaker(s) would be installed across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody.

Conventional Open-Cut Method. The open-cut crossing method is proposed for intermediate crossings, unless HDD is used. The open-cut crossing method also is proposed for some major waterbodies.

Open cut waterbody crossings would involve excavation of the pipeline trench across the waterbody, installation of the pipeline, and backfilling of the trench with no effort to isolate stream flow from construction activities. Excavation and backfilling of the trench would be accomplished using backhoes or other excavation equipment working from the banks of the waterbody. Where there are potentially saturated wetlands along the banks, the excavator and other heavy equipment would operate off timber mats to provide stability and prevent damage to the adjacent wetland where practicable. Trench spoil would be stored on the bank of the waterbody above the high-water mark, at least 10 feet from the water’s edge (topographic conditions permitting), for use as backfill. A prefabricated segment of pipeline would be laid horizontally across the bed of the waterbody and continue at least 10 feet past the high banks on each side of the waterbody before raising in elevation to the normal trench level. The pipeline may be weighted with concrete weights, screw anchors, and/or concrete coating in order to obtain sufficient negative buoyancy. The trench would then be backfilled, the bottom and banks of the waterbody would be restored and stabilized, and all foreign objects would be removed from the waterbody. Ditch plugs of crushed stone, sandbags, or dry soil also may be used to keep backfill from sloughing in toward the center of the stream. Sediment barriers such as silt fencing, staked straw bales, and trench plugs would be installed to prevent spoil and sediment-laden water from entering the waterbody.



TYPICAL WATERBODY CROSSING

NOT TO SCALE

Figure 2.5.1-2
Fayetteville/Greenville Expansion Project
Typical Waterbody Crossing

Flume Method. A flumed or dry crossing of a waterbody involves redirecting stream flow through a flume pipe or pipes at the crossing. This allows for trenching, pipe installation, and restoration in relatively dry conditions while maintaining continuous downstream flow. For this method to be used successfully and safely, soil characteristics must be very stable and stream flow should be low to moderate. The flume pipe(s) must be long enough to accommodate a potential increase in trench width due to sloughing during excavation. Ideally, the flume pipe(s) extends from the inlet side of the equipment crossing to the opposite side of the construction right-of-way. An effective seal is created around the flume pipe(s) so that water cannot penetrate and possibly wash out channelized dams on both the inlet and outlet ends. The flume would not be removed until the pipeline has been installed and the stream and banks have been restored. Figure 2.5.1-3 shows a typical flumed waterbody crossing.

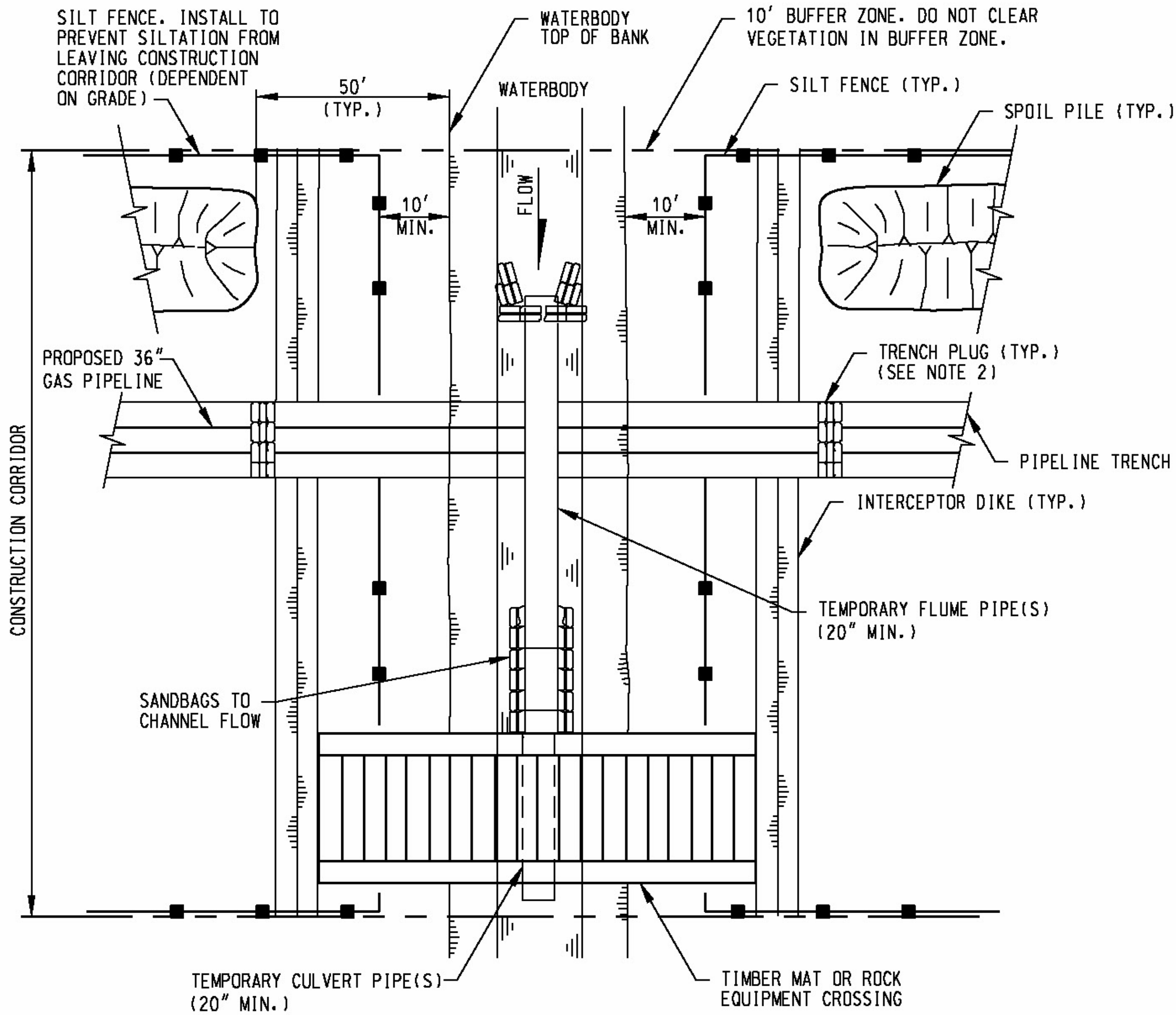
Dam-and-Pump Method. The dam-and-pump method is an “isolated” crossing technique that maintains waterbody flows during in-stream activities. Initially, a dam would be created upstream of the crossing and the water then re-rerouted over upland surfaces (using a pump and hose) to the downstream side of the crossing. If a sudden increase in stream flow occurs during the crossing, the flume method would be used as an alternative to maintain flow and keep the crossing dry. Once the waterbody crossing site is dry, the trench would be excavated, including any upland plugs, and the pipe would be bent, welded, and then lowered into the trench. The crossing pipe would then be tied into the upland construction, and water flow would be restored. The construction is considered “isolated” because the actual waterbody crossing and the upland construction may occur at different times. If the upland construction occurs first, the upland pipe would be installed in the trench with temporary end caps in place and a hard earth plug left between the upland work completed and the work to be done for the waterbody crossing.

HDD Method. The HDD method is a trenchless installation process by which pipeline is installed beneath obstacles or sensitive resources by using equipment and techniques derived from the oil well drilling industry.

Figure 2.5.1-4 shows a typical HDD waterbody crossing. The primary advantage of the HDD method is that there is minimal disturbance of the ground surface between the entry and exit points of the HDD, provided there is reasonable access to the entry and exit points for the drilling rig, reaming pipe, and fluids handling equipment. The length of pipeline that can be installed by HDD depends upon subsurface conditions (geology) and pipe diameter, and is limited by available technology and equipment sizes.

For most HDD crossings, electric-grid guide wires would be hand-laid along the edges of the 150-foot-wide pipeline right-of-way to help guide the drill bit along the predetermined HDD route. In thickly vegetated areas, 2- to 3-foot-wide corridors may be cut using hand tools to lay these electric-grid guide wires, resulting in minimal ground and vegetation disturbance. No large-diameter vegetation would be cut to accomplish guide wire installation. Following guide wire installation, an HDD rig would be set up and a small-diameter pilot hole would be drilled along a prescribed profile.

An HDD crossing is a multi-stage process that consists of establishing a small-diameter pilot hole along a crossing profile, followed by enlargement of the pilot hole (reaming) to accommodate pullback of the pipeline. The pilot hole is drilled using rotation cutting and/or jetting with a jetting assembly attached to drill pipe. The cutting action of the drill head is remotely operated to control its orientation and direction. The position of the drill string is electronically monitored, and directional corrections are made as necessary to ensure that the drill string maintains the desired alignment.



1. SILT FENCE AND INTERCEPTOR DIKE TO BE REMOVED ACROSS PIPELINE TRENCH DURING CONSTRUCTION OF PIPELINE. SILT FENCE AND INTERCEPTOR DIKES TO BE REPLACED AFTER BACKFILL OF TRENCH.

2. USE HARD OR SOFT PLUGS PRIOR TO PIPE INSTALLATION. INSTALL PERMANENT TRENCH PLUGS AFTER PIPE INSTALLATION AND PRIOR TO BACKFILLING PIPELINE TRENCH.

NOT TO SCALE

Figure 2.5.1-3
Fayetteville/Greenville Expansion Project
Waterbody Crossing,
Flumed Crossing Method

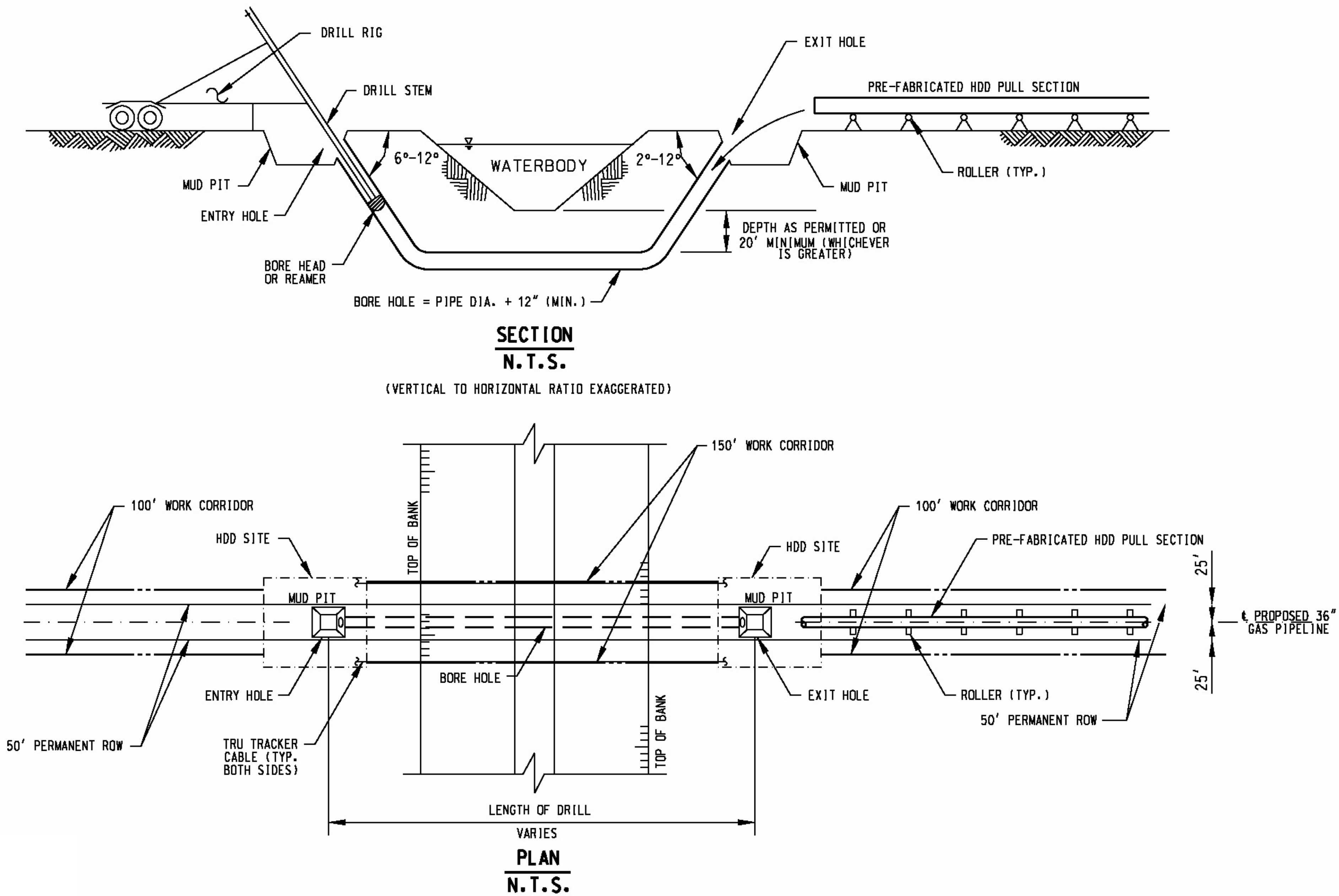


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Figure 2.5.1-4
Fayetteville/Greenville Expansion Project
Typical HDD Waterbody Crossing

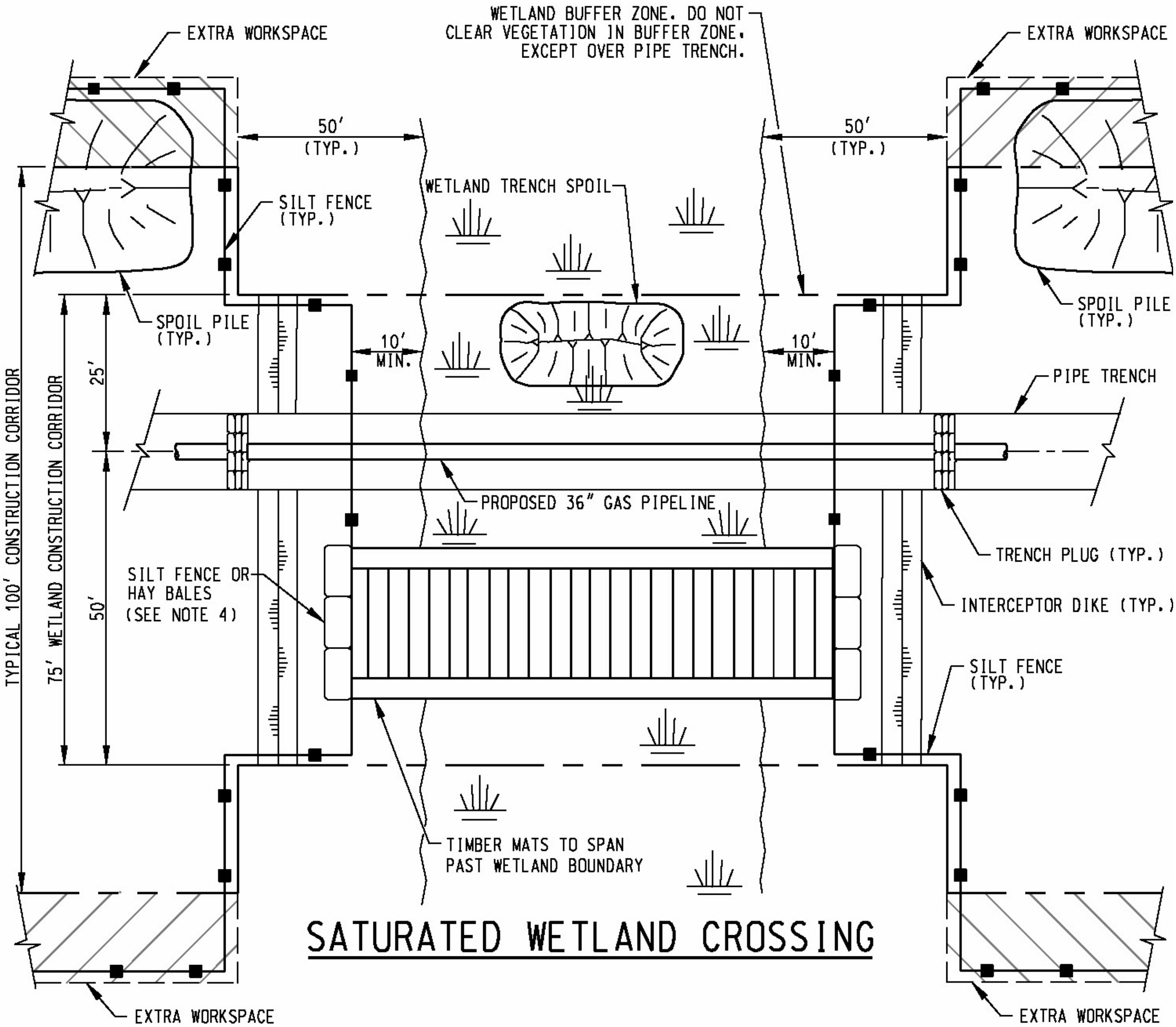
Enlarging the pilot hole is an incremental process accomplished with multiple reaming passes, depending on the pipeline diameter and subsurface geology, to increase the hole diameter. Upon successful completion of the reaming operation, a cylinder-shaped swab is pulled through the hole to ensure the integrity of the completed hole and prepare for pullback of the pipe. The pre-assembled, hydrostatically tested section of pipeline is then pulled into the completed hole. Bentonite drilling fluid is delivered to the cutting head through the drill string to provide the hydraulic cutting action, lubricate the drill bit, help stabilize the hole, and remove cutting spoil as the drilling fluid is returned to the entry point. Drilling fluid is again used during the reaming process to remove cutting spoil. Drilling fluid circulated through the bore hole during the pilot hole drilling and reaming process is collected at the surface and processed to remove spoils, allowing the fluid to be reused. Excess spoils and drilling fluid are treated for disposal and disposed of at an approved location in accordance with regulatory requirements, agreements, and permit conditions. The proposed HDD drilling fluid would consist of water and bentonite. Bentonite is a mixture of non-toxic clays and rock particles consisting of about 85 percent montmorillinite clay, 10 percent quartz and feldspars, and 5 percent accessory materials such as calcite and gypsum.

A successful HDD operation would result in little or no impact on the waterbody being crossed. The HDD method is not without risk, however, as inadvertent drilling fluid releases could result if the fluid escapes containment at pits that would be excavated at the HDD entrance and exit points, or if a “frac-out” occurs. A frac-out occurs when drilling fluids escape the drill bore hole and are forced through the subsurface substrate to the ground surface. Frac-outs occur most often in highly permeable soils during the entrance and exit phases of drilling the pilot hole, as this is when the greatest pressures are exerted on the bore walls in shallow soils. Drilling fluid pressures in the bore hole and drilling fluid pumping and return flow rates would be monitored to detect the potential occurrence of a frac-out. If survey and monitoring procedures indicate that a frac-out may have occurred, Texas Gas would implement the corrective measures specified in its HDD plan to determine a course of action, including modification of drilling fluid parameters or complete suspension of drilling operations. These corrective measures would be implemented to minimize or prevent further releases. Any released drilling fluids would be contained, clean-up procedures would commence, and the appropriate agencies would be notified. Additional information about the potential impacts of this method of construction on waterbodies and wetlands is provided in sections 4.3 and 4.4.

Wetlands

The construction right-of-way width would be 75 feet in wetlands. Operation of construction equipment in wetlands would be limited to that needed to clear the right-of-way, dig the trench, fabricate the pipe, install the pipe, backfill the trench, and restore the right-of-way. Texas Gas would segregate the topsoil up to 1 foot in depth in unsaturated wetlands where hydrologic conditions permit this practice. Segregated topsoil would be placed in the trench following subsoil backfilling. Restoration and monitoring of wetland crossings would be conducted in accordance with our Procedures to help ensure successful wetland revegetation. Fuel would not be stored within wetlands. Figure 2.5.1-5 shows a typical saturated wetland crossing.

Wetland construction would be completed in accordance with all applicable permits and our Procedures. Site-specific conditions at the time of pipeline installation, including soil stability and soil saturation, would determine the specific crossing technique that would be used in each wetland.



SATURATED WETLAND CROSSING

NOTES:

1. INSTALL PERMANENT INTERCEPTOR DIKES AT THE BASE OF ALL SLOPES ADJACENT TO THE WETLAND.
2. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY ADJACENT TO WETLAND UNTIL STAGING AREA IS PREPARED AND WORK IN THE WETLAND IS READY TO COMMENCE.
3. SILT FENCE OR HAY BALES SHALL BE PLACED IN THE GAP AT THE TIMBER MATS BY THE END OF EACH DAY OR PRIOR TO APPROACHING RAIN TO PREVENT SEDIMENT FLOW INTO WETLAND.
4. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
5. SILT FENCE AND INTERCEPTOR DIKE TO BE REMOVED ACROSS PIPE TRENCH AND DURING CONSTRUCTION OF PIPELINE. SILT FENCE AND INTERCEPTOR DIKE TO BE REPLACED AFTER BACKFILL OF TRENCH.

NOT TO SCALE

Figure 2.5.1-5
Fayetteville/Greenville Expansion Project
Typical Saturated Wetland Crossing

Conventional Lay Method. Soils capable of supporting construction equipment would generally be crossed using conventional wetland construction methods. Conventional wetland construction is similar to upland construction, as described in section 2.5.1.1. In some areas, site-specific conditions may not support construction equipment proposed for conventional wetland construction; in these cases, construction mats would be used to minimize disturbances to wetland hydrology and maintain soil structure.

Push/Float Method. The push/float method of construction would be used in inundated lowland or saturated wetland areas where the soils and hydrology cannot support conventional pipe-laying equipment and where there are sufficient quantities of water to allow for pipe to be floated through the open ditch. The pipe trench would be excavated using low-ground-weight equipment, thus limiting the need for grubbing and grading activities over the trench line or, for safety reasons, on the working side of the right-of-way. The coated and weighted pipe would be welded together at a staging area. There, floats would be attached to the pipe to give it buoyancy in order to allow the welded pipe to then be pushed along the water-filled trench until the pipe string is in place. As necessary, "pulling" of the pipe may be required to move the pipeline along the trench. The floats would then be cut loose, allowing the pipe to sink to the bottom of the trench. The trench would then be backfilled. The push/float construction method minimizes the number of equipment passes, reducing wetland impacts and soil compaction. The staging areas for this type of wetland crossing, if needed, would be established within the construction corridor. Original surface hydrology would be re-established in wetlands by backfilling the pipe trench and grading the surface with backhoes or draglines operating from the board road, depending upon the water level, degree of soil saturation, and the bearing capacity of the soils. Segregated topsoil would be replaced in unsaturated wetlands. Roots and stumps would be removed only in the areas of the pipe trench, allowing existing vegetation to recover more rapidly in the remainder of the right-of-way once the board roads and spoil piles have been removed.

Texas Gas would work with the USACE, FWS, state and local agencies, and landowners to develop an acceptable wetland revegetation plan prior to commencement of construction. The permanent right-of-way in forested wetlands would be maintained in accordance with our Procedures, which require that the permanent right-of-way in forested wetlands be allowed to return to forest except for a 10-foot-wide herbaceous corridor centered over the pipeline and a 30-foot-wide corridor centered over the pipeline where trees greater than 15 feet may be selectively cut and removed.

HDD Method. The HDD method used to cross wetlands is the same as that used to cross waterbodies.

Bored Crossings

Some waterbodies, and all major highways and railroads would be bored. Boring involves pushing the pipe through a hole below the waterbody, road, or railroad. A bore pit is dug on one side of the crossing and a receiving pit is dug on the other side of the crossing, and both are excavated to a depth equal to the depth of the ditch (at least 5 feet below the road surface and 10 feet below the toe of a railroad embankment). The bore pit is then graded so that the bore is at the proper elevation for installation of the pipe. A boring machine is then lowered to the bottom of the bore pit and placed on supports. The machine cuts a shaft under the crossing using a cutting head mounted on an auger. The pipeline is then pushed through behind the auger.

Roads and Railroads

Construction of the pipeline across hard surfaced roads and railroads would typically be accomplished by boring through the road or railroad bed with a borehole on either side of the road or railroad bed providing a working area for the equipment (see above). Road crossings would be maintained continuously by using steel plates to cover the trench at the crossing or alternate access to minimize inconvenience to the public if they are open cut. The pipelines would cross 248 federally, state-, or locally maintained roads and 11 railroads. Installation of the pipeline under major paved highways and railroads, along which traffic cannot be interrupted, would be accomplished by boring or HDD.

Crossing most dirt or gravel roads would be accomplished by an open cut. Roads would then be restored to preconstruction conditions pursuant to the requirements of the permitting agency. Immediately following backfilling, Texas Gas would restore the road surface by topping the disturbed area with dense, graded aggregate limestone and a top layer matching the existing roadway. If an open-cut for a road crossing requires extensive time, provisions would be made for temporary detours or other measures to allow safe traffic flow during construction. All road and railroad crossings would be installed in compliance with applicable permits and approvals. Appropriate safety measures such as flag persons, signs, barricades, guardrails, and signals would be placed by the contractor.

Where pipe installation requires a casing, the pipe would be supported on each end of the casing, a vent would be installed on each end, and the resistance of the pipe to the casing tested for electrical shorts. Existing underground utilities would be protected and normally given a clearance of 24 inches, but with a minimum of 12 inches clearance between the gas pipeline and the other utilities. Casings would be installed only where specifically required by road/railroad authorities. All road and railroad crossings would be installed in compliance with applicable permits and approvals.

Residential Areas

Where residences would be within 50 feet of the construction work area, Texas Gas would reduce pipeline offset or construction workspaces to minimize inconvenience to property owners where practicable. If construction requires the removal of private property features such as gates or fences, the landowner or tenant would be notified prior to the action. Following completion of construction, the property would be restored as requested by the landowner insofar as the landowner's requirements are compatible with Texas Gas's standards regarding right-of-way restoration and maintenance.

- In areas where construction would affect residential property, Texas Gas would implement the following construction techniques. Texas Gas would notify the landowner(s) prior to construction and arrange work hours to take landowner needs into consideration. Dust minimization techniques would be used on site, and all litter and debris would be removed daily from the construction work area. During construction, the edge of the construction work area would be safety fenced for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials, including spoil piles, remain within the construction work area. Mature trees and landscaping would be preserved to the extent practicable while ensuring the safe operation of construction equipment. Where residences are less than 25 feet from the construction work area, the pipe section would be welded, inspected, and welds coated prior to any trench excavation. The trench would not be excavated until the pipe is ready for installation, and the trench would be backfilled immediately after pipe installation. Every effort would be made to excavate the trench, lower the pipeline, make tie-ins, and backfill the trench in one day. Immediately after backfilling the trench, all lawn areas and landscaping within the construction work area would be restored. Site-specific construction drawings depicting the temporary and permanent rights-of-way and noting special construction techniques would be prepared.

Commercial/Industrial Areas

Impacts on commercial and industrial areas would be limited to the construction and post-construction restoration periods, when construction activities can inconvenience business owners, employees, and customers. Texas Gas would maintain close coordination with business owners to maintain access, decrease construction duration, and generally minimize impacts.

Foreign Pipeline Crossings

The proposed Project is located in an active oil and gas producing area. In particular, the Fayetteville Lateral would be constructed in an area where there is active drilling and construction of gathering pipelines. As a result, the Project pipeline would cross numerous foreign pipelines. The Texas Gas pipelines would be installed under most existing foreign pipelines at an appropriate depth to meet DOT soil cover and separation requirements. Extra workspace would be required at foreign pipeline crossings to accommodate the increased excavation depths and avoid placing the spoil or construction equipment over the existing pipelines for safety reasons. Texas Gas would notify the owners/operators of foreign pipelines when construction activities are near these pipelines.

2.5.2 Aboveground Facilities

Construction of aboveground facilities would involve typical industrial facility construction procedures. Construction activities and storage of construction materials and equipment would be confined to the facility footprint. Following the initial earth work, excavation would be completed as needed for the concrete foundations for the metering equipment and any buildings. Subsurface friction piles may be required to support foundations, depending upon the bearing capacity of the existing soils and the equipment loads. Forms would be set, rebar installed, and the concrete poured and cured in accordance with applicable industry standards. Backfill would be compacted in place, and excess soil would be used elsewhere or distributed around the site to improve grade.

The metering equipment and other materials would be delivered to the site by truck, off-loaded using cranes and/or front-end loaders, positioned on the foundations, leveled, grouted where necessary, and secured with anchor bolts. All components in high-pressure natural gas service would be hydrostatically tested, and all controls and safety equipment and systems, including emergency shutdown systems, relief valves, and gas and fire detection equipment would be checked and tested before being placed in service. Following completion of construction, each site would be fenced and most areas in and around the meters and associated piping and equipment would be covered with crushed rock (or equivalent). Permanent roads and parking areas may be surfaced with crushed rock, concrete, or asphalt. Other ground surfaces, including adjacent areas outside the fence that would surround the facility, would be restored, seeded, and revegetated.

2.6 OPERATION AND MAINTENANCE PROCEDURES

2.6.1 Pipeline Facilities

Texas Gas would operate and maintain the proposed pipeline and aboveground facilities in compliance with DOT regulations provided at 49 CFR 192, FERC's regulations at 18 CFR 380.15, and the maintenance provisions of our Plan and Procedures.

A locally based, full-time staff would be assigned to operate and maintain the pipeline. Maintenance activities would include monitoring, inspection, and repair of the right-of-way, and cleaning of the pipeline. Periodic aerial and ground inspections by pipeline personnel would be performed to identify (1) soil erosion that may expose the pipe, (2) dead vegetation that may indicate a leak in the line, (3) unauthorized encroachment on the right-of-way such as by buildings, (4) areas requiring revegetation or repair of erosion control measures, and (5) other conditions that could present a safety hazard or require preventive maintenance or repairs. The pipeline cathodic protection system also would be monitored and inspected periodically to ensure proper and adequate corrosion protection. The pipeline has been designed to use “smart pig” inspection technology.

Texas Gas would maintain vegetation on the permanent right-of-way in upland areas by mowing, cutting, and trimming. Large brush and trees would be removed periodically from within the operational right-of-way. Trees greater than 15 feet in height or deep-rooted shrubs that could damage the pipeline’s protective coating, obscure periodic surveillance, or interfere with potential repairs would not be allowed to grow within 15 feet of the pipeline in wetlands or within 25 feet of the pipeline in uplands. The frequency of vegetation maintenance would depend upon the growth rates but would not be more frequent than dictated by our Plan and Procedures. Vegetation maintenance would not normally be required in agricultural or grazing areas. Other than preventing wetland tree growth as described above, vegetation maintenance would not normally be required in wetlands.

The pipelines would be clearly marked at line-of-sight intervals and at crossings of roads, railroads, waterbodies, and other key points in accordance with DOT regulations. The markers would clearly indicate the presence of the pipeline and provide a telephone number and address where a company representative could be reached in the event of an emergency or prior to any excavation in the area of the pipeline by a third party. Texas Gas would participate in the Arkansas and Mississippi One-Call systems.

2.6.2 Compressor Station and Other Aboveground Facilities

Compressor station crews would perform operation and maintenance of all equipment. Station personnel would perform routine checks of the facilities, including calibration of equipment and instrumentation, inspection of critical components, and scheduled and routine maintenance of equipment. Safety equipment such as pressure relief devices, fire detection and suppression systems, and gas detection systems would be tested for proper operation. Corrective actions would be taken for any identified problem.

The stations would be equipped with combustible gas and fire detection alarm systems and an emergency shutdown system. The gas detection system would send an alarm upon detection of 25 percent of the lower explosive limit of natural gas in air. Automatic emergency shutdown of the compressor, evacuation or venting of gas from the station piping, and isolation of the station from the main pipeline would occur following a fire detection alarm or the detection of 50 percent of the lower explosive limit inside the station. The compressor station also would be equipped with relief valves or pressure protection devices to protect the station piping from over-pressurization if station or unit control systems fail. A telemetry system would notify local personnel and personnel at the gas control headquarters in Owensboro, Kentucky, of the activation of safety systems and alarms, who would in turn instruct maintenance personnel to investigate and take proper corrective actions.

Routine operation and maintenance also would be performed at all other aboveground facilities by qualified personnel. Safety equipment such as pressure relief devices, fire detection and suppression systems, and gas detection systems would be maintained throughout the life of each facility. Mainline valves also would be inspected, serviced, and tested to ensure proper functioning.

2.7 SAFETY CONTROLS

2.7.1 Pipeline

The pipeline would be constructed, operated, and maintained in accordance with all applicable federal, state, and local laws and regulations, including but not limited to the DOT regulations in 49 CFR Part 192.

2.7.1.1 Cathodic Protection

To protect the pipeline from corrosion, cathodic protection would be provided by an impressed current system supplemented, where necessary, by sacrificial magnesium anodes. An epoxy coating to protect the pipe against corrosion would be applied to all buried facilities, and all aboveground facilities would be primed and painted. Cathodic protection units would be monitored regularly to maintain required pipe-to-soil potential in accordance with the specifications set forth by DOT regulations.

2.7.1.2 Emergency Response Procedures

Pipeline system emergencies can include gas leaks, fire or explosion, and/or damage to the pipeline and aboveground facilities. In accordance with DOT regulations, Texas Gas would develop a plan that would address procedures to be followed in the event of a pipeline emergency. This plan would include training of employees in emergency procedures; establishing liaison with appropriate fire, police, and other community officials; and informing the public about how to identify and report an emergency condition along the pipeline route.

2.8 FUTURE PLANS AND ABANDONMENT

At this time, Texas Gas has no plans to expand or abandon any of the pipeline system. However, as market conditions evolve, Texas Gas may investigate pipeline expansion opportunities. Expansion or abandonment of the pipeline system and associated facilities would be subject to appropriate FERC authorization and environmental analysis in accordance with applicable federal, state, and local regulations in effect at that time.