2.0 PROJECT DESCRIPTION

2.1 PROPOSED FACILITIES

Transwestern proposes to expand its existing natural gas transmission pipeline system in New Mexico and Arizona. Transwestern would construct two loops on its existing San Juan Lateral pipeline in San Juan and McKinley Counties, New Mexico (San Juan Lateral Loops A and B). In addition, Transwestern would construct a new natural gas transmission pipeline system between Yavapai and Pinal Counties, Arizona (Phoenix Lateral). The entire project, referred to as the Phoenix Expansion Project, would involve the construction and operation of:

- 2 pipeline loops and a new lateral pipeline as described above;
- 7 customer lateral pipelines;
- a filter-separator/odorant facility;
- 4 taps;
- 11 meter stations;
- 6 pig launchers;
- 3 pig receivers;
- 27 valves; and
- 4 remote blowdown valves.

The Phoenix Expansion Project would also include modifications at two of Transwestern's existing compressor stations. Transwestern would also acquire an undivided ownership interest in the existing East Valley Lateral in Pinal and Maricopa Counties, Arizona. Overview maps of the project facilities in New Mexico and Arizona are provided on figures 2.1-1 and 2.1-2, respectively. Detailed maps showing the pipeline routes, aboveground facilities, pipe storage and contractor yards, borrow/disposal areas, and access roads are in Appendix B.

2.1.1 Pipeline Facilities

Transwestern's existing pipeline system consists of a 2,500-mile-long pipeline system that transports natural gas from the San Juan, Anadarko, and Permian Basins to markets in the Midwest, Texas, Arizona, New Mexico, and California. One of the components of Transwestern's existing pipeline system is the San Juan Lateral between San Juan and McKinley Counties, New Mexico, which consists of 97.1 miles of 36-inch-diameter lateral pipeline and two 36-inch-diameter loops totaling approximately 72.6 miles. The existing lateral was installed in the early 1990s, and the two existing loops were installed in 2005 as part of the San Juan 2005 Expansion Project (Docket No. CP04-104-000). The pipeline facilities proposed by Transwestern to expand this component of its existing system consist of two sections of 36-inch-diameter pipeline loops (the San Juan Lateral Loops A and B) that would generally run parallel or adjacent to the existing San Juan Lateral for a total of about 24.6 miles.

In Arizona, Transwestern's existing system consists of a 30-inch-diameter mainline and a 30-inch diameter loop. Transwestern proposes to construct a lateral pipeline, the Phoenix Lateral, extending south from MP 235.7 of its existing mainline and loop in Yavapai County, Arizona. The proposed Phoenix Lateral would consist of approximately 259.3 miles of new 42- and 36-inch-diameter pipeline between Yavapai and Pinal Counties, Arizona. About 1.4 miles of smaller diameter customer laterals would be constructed to connect the Phoenix Lateral to the proposed meter stations. Additionally, Transwestern would acquire an undivided interest in the existing 36.7-mile-long, 24-inch-diameter East Valley Lateral, which extends between Pinal and Maricopa Counties, Arizona. Table 2.1.1-1 lists the proposed pipeline facilities by name, pipe diameter, milepost range, length, and location.

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Figure 2.1-1 Project Overview Map – New Mexico Facilities

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Figure 2.1-2 Project Overview Map – Arizona Facilities

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TABLE 2.1.1-1

Pipeline Facilities Associated with the Phoenix Expansion Project

Pipeline Facilities	Pipe Diameter (inches)	Milepost Range [a]	Length (miles)	County, State
San Juan Lateral Loops				
Loop A	36	0.0 - 8.9	8.9	San Juan, New Mexico
Loop B	36	71.9 - 87.6	15.7	McKinley, New Mexico
Total San Juan Lateral Loops			24.6	
Phoenix Lateral	42	0.0 - 3.6	3.6	Yavapai, Arizona
		3.6 - 4.5	0.9	Coconino, Arizona
		4.5 - 90.8	86.8	Yavapai, Arizona
		90.8 - 95.2	4.4	Maricopa, Arizona
Subtotal 42-inch-diameter pipe			95.7	
	36	95.2 - 212.8	120.1	Maricopa, Arizona
		212.8 - 255.1	43.5	Pinal, Arizona
Subtotal 36-inch-diameter pipe			163.6	
Total Phoenix Lateral			259.3	
Customer Laterals				
Southwest Gas Corporation (SWG) Sun Valley South Lateral	6	0.0 - 0.0 [b]	<0.1	Maricopa, Arizona
Arizona Public Service Company (APS) Redhawk Lateral	24	0.0 - 0.4 [c]	0.4	Maricopa, Arizona
Entegra Gila River Lateral	20	0.0 - 0.0 [d]	<0.1	Maricopa, Arizona
SWG Rainbow Valley Lateral	6	0.0 - 0.0 [e]	<0.1	Maricopa, Arizona
Salt River Project Agricultural Improvement and Power District Desert Basin Lateral	16	0.0 - 0.8 [f]	0.8	Pinal, Arizona
APS Sundance Lateral	16	0.0 - 0.0 [g]	<0.1	Pinal, Arizona
El Paso Natural Gas Company Pinal County Lateral	24	0.0 - 0.0 [h]	<0.1	Pinal, Arizona
Total Customer Laterals			1.4	
East Valley Lateral [i]	24	0.0 - 36.7	36.7	Pinal and Maricopa, Arizona
Project Total			322.0	

[a] Mileposts are based on the existing San Juan Lateral (New Mexico) or new Phoenix Lateral (Arizona) mileposts and are used for reference. The distance between mileposts may differ from the miles included in the "Length" column, which reflects the actual surveyed distance.

[b] Connects to the Phoenix Lateral at MP 148.6.

[c] Connects to the Phoenix Lateral at MP 164.9.

[d] Connects to the Phoenix Lateral at MP 180.2.

[e] Connects to the Phoenix Lateral at MP 193.3.

[f] Connects to the Phoenix Lateral at MP 239.1.

[g] Connects to the Phoenix Lateral at MP 250.6.

[h] Connects to the Phoenix Lateral at MP 255.1.

[i] The East Valley Lateral is an existing 36.7-mile-long, 24-inch-diameter lateral that was constructed in 2004 and would connect to the Phoenix Lateral at MP 255.1. Transwestern would acquire an undivided interest in this facility as part of the Phoenix Expansion Project.

San Juan Lateral Loops

The San Juan Lateral Loops would consist of:

- Loop A – 8.9 miles of 36-inch-diameter pipeline loop extending from MPs 0.0 to 8.9 along the existing San Juan Lateral in San Juan County, New Mexico; and

- Loop B – 15.7 miles of 36-inch-diameter pipeline loop extending from MPs 71.9 to 87.6 along the existing San Juan Lateral in McKinley County, New Mexico.

Phoenix Lateral and Customer Laterals

The Phoenix Lateral and customer laterals would consist of:

- Phoenix Lateral – 259.3 miles of new 42- and 36-inch-diameter lateral pipeline, consisting of 95.7 miles of 42-inch-diameter pipeline extending from MP 0.0 in Yavapai County, Arizona to MP 95.2 in Maricopa County, Arizona, and 163.6 miles of 36-inch-diameter pipeline extending from MP 95.2 in Maricopa County, Arizona to MP 255.1 in Pinal County, Arizona.

- Customer Laterals – 1.4 miles of new 24-, 20-, 16-, and 6-inch-diameter lateral pipeline connecting the Phoenix Lateral to meter stations that are not located immediately adjacent to the Phoenix Lateral right-of-way. These include the:

    - SWG Sun Valley South Lateral – 210 feet of 6-inch-diameter pipeline extending from MP 148.6 of the proposed Phoenix Lateral to the proposed SWG Sun Valley South Meter Station in Maricopa County, Arizona;

    - APS Redhawk Lateral – 2,000 feet of 24-inch-diameter pipeline extending from MP 164.9 of the proposed Phoenix Lateral to the proposed APS Redhawk Meter Station in Maricopa County, Arizona;

    - Entegra Gila River Lateral – 200 feet of 20-inch-diameter pipeline extending from MP 180.2 of the proposed Phoenix Lateral to the proposed Entegra Gila River Meter Station in Maricopa County, Arizona;

    - SWG Rainbow Valley Lateral – 370 feet of 6-inch-diameter pipeline extending from MP 193.3 of the proposed Phoenix Lateral to the proposed SWG Rainbow Valley Meter Station in Maricopa County, Arizona;

    - SRP Desert Basin Lateral – 4,000 feet of 16-inch-diameter pipeline extending from MP 239.1 of the proposed Phoenix Lateral to the proposed SRP Desert Basin Meter Station in Pinal County, Arizona;

    - APS Sundance Lateral – 158 feet of 16-inch-diameter pipeline extending from MP 250.6 of the proposed Phoenix Lateral to the proposed APS Sundance Meter Station in Pinal County, Arizona;

    - EPNG Pinal County Lateral – 450 feet of 24-inch-diameter pipeline extending from MP 255.1 of the proposed Phoenix Lateral to the proposed EPNG Pinal County Meter Station in Pinal County, Arizona; and

- East Valley Lateral – 36.7 miles of existing 24-inch-diameter lateral pipeline connecting at the terminus of the Phoenix Lateral (MP 255.1) extending south to the existing EPNG interstate pipeline and north to the existing SRP Santan Power Station in Maricopa County, Arizona.

The design pressure and maximum allowable operating pressure (MAOP) of the San Juan Lateral Loops would be 1,202 pounds per square inch gauge (psig), and the normal operating pressure would be 1,080 psig. The design pressure and MAOP of the Phoenix Lateral and customer laterals would be 1,008 psig, and the normal operating pressure would be 839 psig.

2.1.2 Aboveground Facilities

Associated aboveground facilities proposed by Transwestern as part of the Phoenix Expansion Project include (see tables 2.1.2-1 and 2.1.2-2):

- piping modifications at the existing Bloomfield Compressor Station in San Juan County, New Mexico;
- installation of pressure controls on valves at the existing Seligman Compressor Station No. 1 in Mohave County, Arizona to prevent overpressure in the downstream pipelines in low flow rate conditions due to the elevation difference between the station and the end of the pipeline;
- installation of the Ash Fork Facility at MP 0.0 of the Phoenix Lateral in Yavapai County, Arizona including:
  - 2 side valves on the existing mainline and loop;
  - 2 filter-separators at the intersection of the mainline and the Phoenix Lateral to remove pipeline liquids that may be present;
  - odorant injection facilities and an odorant storage tank to odorize the natural gas before delivery into the Phoenix Lateral; and
  - telecommunications equipment;
- installation of 4 taps on the Phoenix Lateral, of which 3 would be located in Yavapai County and 1 would be located in Maricopa County, Arizona to serve potential future gas customers;
- installation of 11 meter stations, of which 5 would be located in Maricopa County, Arizona and 6 would be located in Pinal County, Arizona to measure gas delivery from the Phoenix Lateral and the East Valley Lateral to various customers;
- relocation of 1 pig launcher from the existing San Juan Lateral to the Bloomfield Compressor Station in San Juan County, New Mexico;

TABLE 2.1.2-1

Compressor Station Modifications, Filter-Separator/Odorant Facilities, Taps, and Meter Stations Associated with the Phoenix Expansion Project

Facility	Approximate Milepost [a]	County, State
Compressor Station Modifications and Odorant Facilities		
San Juan Lateral Loops		
Bloomfield Compressor Station - piping modifications	0.0	San Juan, New Mexico
Transwestern's Mainline System		
Seligman Compressor Station No. 1 - pressure control valve Installation	289.5	Mohave, Arizona
Phoenix Lateral		
Ash Fork Facility - installation of side valves, filter-separators, odorant injection facilities and odorant storage tank, valve, and telecommunications equipment	0.0	Yavapai, Arizona
Customer Laterals		-None-
East Valley Lateral		-None-
Taps		
San Juan Lateral Loops		-None-
Phoenix Lateral		
Unisource Energy, Inc. (UNS) Tap, Chino Valley	32.5	Yavapai, Arizona
UNS Tap, Prescott Valley Airport	43.3	Yavapai, Arizona
UNS Tap, Prescott South	50.2	Yavapai, Arizona
El Paso Natural Gas Company (EPNG) Gila Bend Tap	180.2	Maricopa, Arizona
Customer Laterals		-None-
East Valley Lateral		-None-
Meter Stations		
San Juan Lateral Loops		-None-
Phoenix Lateral		
Southwest Gas Corporation (SWG) Sun Valley North Meter Station	137.7	Maricopa, Arizona
SWG Sun Valley South Meter Station	148.6	Maricopa, Arizona
Arizona Public Service Company (APS) Redhawk Meter Station	164.9	Maricopa, Arizona
Entegra Gila River Meter Station	180.2	Maricopa, Arizona
SWG Rainbow Valley Meter Station	193.3	Maricopa, Arizona
Salt River Project Agricultural Improvement and Power District Desert Basin Meter Station	239.1	Pinal, Arizona
APS Sundance Meter Station	250.6	Pinal, Arizona
EPNG Pinal County Meter Station	255.1	Pinal, Arizona
EPNG East Valley Lateral Meter Station	255.1	Pinal, Arizona
Customer Laterals		-None-
East Valley Lateral		
SWG New Florence Meter Station	NA [b]	Pinal, Arizona
SWG Germann Meter Station	NA [c]	Pinal, Arizona

[a] Mileposts are based on the existing San Juan Lateral (New Mexico) or new Phoenix Lateral (Arizona) mileposts and are used for reference.

[b] Located at MP 10.5 along the existing East Valley Lateral.

[c] Located at MP 29.3 along the existing East Valley Lateral.

TABLE 2.1.2-2

Pig Launcher/Receiver and Valve Facilities Associated with the Phoenix Expansion Project

Facility	Approximate Milepost [a]	County, State
Pig Launcher/Receiver Facilities		
San Juan Lateral Loops		
Pig launcher relocation (from MP 8.9 of the existing San Juan Lateral)	0.0	San Juan, New Mexico
Pig receiver removal	71.9	McKinley, New Mexico
Pig launcher removal	87.8	McKinley, New Mexico
Phoenix Lateral		
Pig launcher	0.0	Yavapai, Arizona
Pig receiver	95.2	Yavapai, Arizona
Pig launcher	95.2	Yavapai, Arizona
Pig receiver	255.1	Pinal, Arizona
Customer Laterals		
Pig launcher for Arizona Public Service Company (APS) Redhawk Lateral	164.9	Maricopa, Arizona
Pig launcher/receiver for Entegra Gila River Lateral	180.2	Maricopa, Arizona
Pig launcher for the Salt River Project Agricultural Improvement and Power District Desert Basin Lateral	239.1	Pinal, Arizona
Pig launcher for the APS Sundance Lateral	250.6	Pinal, Arizona
Valves and Remote Blowdown Valves		
San Juan Lateral Loops	-None-	
Phoenix Lateral		
Valve-0	0.0	Yavapai, Arizona
Valve-17	17.3	Yavapai, Arizona
Valve-35	34.8	Yavapai, Arizona
Valve-42	41.8	Yavapai, Arizona
Valve-49	48.7	Yavapai, Arizona
Valve-56	55.5	Yavapai, Arizona
Valve-62	62.4	Yavapai, Arizona
Valve-69	69.3	Yavapai, Arizona
Valve-82	81.8	Yavapai, Arizona
Valve-87	87.4	Yavapai, Arizona
Valve-95	95.2	Maricopa, Arizona
Valve-104	104.3	Maricopa, Arizona
Valve-115	114.6	Maricopa, Arizona
Remote Blowdown Valve-115	114.6	Maricopa, Arizona
Valve-123	123.3	Maricopa, Arizona
Valve-133	133.0	Maricopa, Arizona
Remote Blowdown Valve-133	133.0	Maricopa, Arizona
Valve-147	147.1	Maricopa, Arizona
Remote Blowdown Valve-147	147.1	Maricopa, Arizona
Valve-152	151.8	Maricopa, Arizona
Remote Blowdown Valve-152	151.8	Maricopa, Arizona
Valve-165	164.9	Maricopa, Arizona
Valve-180	180.2	Maricopa, Arizona
Valve-193	193.3	Maricopa, Arizona
Valve-213	213.4	Pinal, Arizona

TABLE 2.1.2-2 (cont'd)

Pig Launcher/Receiver and Valve Facilities Associated with the Phoenix Expansion Project

Facility	Approximate Milepost [a]	County, State
Valve-221	221.4	Pinal, Arizona
Valve-232	231.6	Pinal, Arizona
Valve-239	239.3	Pinal, Arizona
Valve-245	244.7	Pinal, Arizona
Valve-250	250.5	Pinal, Arizona
Valve-255	255.1	Pinal, Arizona

[a] Mileposts are based on the existing San Juan Lateral (New Mexico) or proposed Phoenix Lateral (Arizona) mileposts and are used for reference.

- removal of 1 pig receiver and 1 pig launcher from the existing San Juan Lateral in McKinley County, New Mexico;

- installation of 6 pig launchers, of which 2 would be associated with the Phoenix Lateral in Yavapai County, Arizona and 4 would be associated with the customer laterals (2 in Maricopa County and 2 in Pinal County, Arizona);

- installation of 3 pig receivers, of which 2 would be associated with the Phoenix Lateral (1 in Yavapai County and 1 in Pinal County, Arizona), and 1 would be associated with the customer laterals in Maricopa County, Arizona; and

- installation of 27 valves and 4 remote blowdown valves along the Phoenix Lateral in Yavapai, Maricopa, and Pinal Counties, Arizona.

2.2 LAND REQUIREMENTS

Table 2.2-1 summarizes the land requirements for the project. A detailed description and breakdown of land requirements and use is presented in section 4.7.1. Construction of the Phoenix Expansion Project would disturb approximately 5,951.3 acres of land, including the pipeline facilities, aboveground facilities, pipe storage and contractor yards, borrow/disposal areas, and access roads. Approximately 2,073.3 acres of the 5,951.3 acres used for construction would be required for operation of the project. Of this total, about 1,730.7 acres would be for the pipeline facilities, 14.5 acres would be for the aboveground facilities, and 328.1 acres would be for permanent access roads associated with the proposed facilities. The remaining 3,878.0 acres of land would be restored and allowed to revert to former use.

Approximately 60.6 percent of the land affected by construction and operation of the pipeline facilities would be authorized by the various governmental and tribal entities including: the BLM (22.7 percent), the State of Arizona (19.9 percent), the FS (10.3 percent), the Navajo Nation (5.0 percent), local counties and municipalities (2.4 percent), and the BOR (0.3 percent). The remainder of the land that would be affected (39.4 percent) is privately owned. A detailed description of land ownership is presented in section 4.7.2.

2.2.1 Pipeline Facilities

Of the approximately 4,346.6 acres of land that would be disturbed during construction of the pipeline facilities, about 3,682.6 acres would be disturbed by the pipeline right-of-way and 664.0 acres would be disturbed by temporary extra workspace. Operation of the pipeline facilities would require about 1,730.7 acres of land.

Of the 285.3 miles of proposed pipeline loops and laterals, approximately 245.0 miles (86 percent) would be constructed in or adjacent to various existing rights-of-way (see Appendix C). Of the San Juan Lateral Loops, Loop A would be adjacent to existing rights-of-way for about 6.7 miles (75 percent) and Loop B would be entirely adjacent to existing rights-of-way. Of the 259.3 miles of pipeline associated with the Phoenix Lateral, 35.8 miles (14 percent) would be constructed on newly created right-of-way that does not parallel existing rights-of-way. No portion of the 1.4 miles of customer laterals would be within or adjacent to existing right-of-way.

TABLE 2.2-1

Summary of Land Requirements Associated with the Phoenix Expansion Project

Facility	Land Affected During Construction (acres) [a]	Land Affected During Operation (acres)
Pipeline Facilities		
San Juan Lateral Loops Right-of-Way [b]		
Loop A	107.8	53.9
Loop B	189.8	94.9
Phoenix Lateral Right-of-Way [c]	3,373.8	1,574.5
Customer Laterals [d]		
Southwest Gas Corporation (SWG) Sun Valley South Lateral	0.2	0.1
Arizona Public Service Company (APS) Redhawk Lateral	3.3	2.2
Entegra Gila River Lateral	<0.1	<0.1
SWG Rainbow Valley Lateral	0.3	0.2
Salt River Project Agricultural Improvement and Power District (SRP) Desert Basin Lateral	6.9	4.6
APS Sundance Lateral	0.2	0.1
El Paso Natural Gas Company (EPNG) Pinal County Lateral	0.3	0.2
East Valley Lateral [e]	0.0	0.0
Pipeline Right-of-Way Subtotal	3,682.7	1,730.7
Temporary Extra Workspace		
San Juan Lateral Loops		
Loop A	42.2	0.0
Loop B	44.1	0.0
Phoenix Lateral	575.3	0.0
Customer Laterals		
SWG Sun Valley South Lateral	0.0	0.0
APS Redhawk Lateral	0.1	0.0
Entegra Gila River Lateral	0.0	0.0
SWG Rainbow Valley Lateral	0.0	0.0
SRP Desert Basin Lateral	2.3	0.0
APS Sundance Lateral	0.0	0.0
EPNG Pinal County Lateral	0.0	0.0
East Valley Lateral [e]	0.0	0.0
Temporary Extra Workspace Subtotal	664.0	0.0
Pipeline Facilities Total	4,346.6	1,730.7
Aboveground Facilities		
San Juan Lateral Loops [f]	0.0	0.0
Phoenix Lateral		
Ash Fork Facility	2.5	2.5
Taps [g]	0.0	0.0
Meter Stations	7.2	7.2
Pig Launcher/Receiver Facilities [h]	0.0	0.0
Valves and Remote Blowdown Valves [i]	2.9	2.9
Customer Laterals		
Pig Launcher/Receiver Facilities	0.9	0.9
East Valley Lateral		
Meter Stations	1.0	1.0
Pig Launcher/Receiver Facilities [h]	0.0	0.0
Aboveground Facilities Total	14.5	14.5

TABLE 2.2-1 (cont'd)

Summary of Land Requirements Associated with the Phoenix Expansion Project

Facility	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipe Storage and Contractor Yards	310.2	0.0
Offsite Borrow/Disposal Areas	186.8	0.0
Access Roads		
San Juan Lateral Loops		
Loop A	26.7	0.0
Loop B	74.2	0.0
Phoenix Lateral	992.3	328.1
Customer Laterals	0.0	0.0
East Valley Lateral	0.0	0.0
Subtotal Access Roads	1,093.2	328.1
Project Total	5,951.3	2,073.3

[a] Does not take into account the approximately 6.0 acres that would be avoided if the horizontal directional drill crossing of the San Juan River is successful (see section 4.3.2.3).

[b] Based on a 100-foot-wide construction right-of-way and a 50-foot-wide permanent right-of-way.

[c] Based on a 120-foot-wide construction right-of-way between MPs 0.0 and 95.2 and a 100-foot-wide construction right-of-way between MPs 95.2 and 255.1, and a 50-foot-wide permanent right-of-way.

[d] Based on a 75-foot-wide construction right-of-way and a 50-foot-wide permanent right-of-way.

[e] The East Valley Lateral is an existing lateral pipeline.

[f] No additional land disturbance would be required outside of the construction right-of-way or at existing aboveground facility sites.

[g] Taps would be located within the permanent right-of-way and not affect additional land.

[h] Pig launcher/receiver facilities would be located within the permanent right-of-way or collocated with aboveground facility sites and not affect additional land with the exception of the pig launcher associated with the APS Redhawk Lateral.

[i] Valves would be located within the permanent right-of-way or collocated with aboveground facility sites and not affect additional land with the exception of three valves (95, 239, and 250) and the four remote blowdown valves.

Note: The totals shown in this table may not equal the sum of addends due to rounding.

Transwestern proposes to generally use a 100-foot-wide construction right-of-way for the San Juan Lateral Loops, consisting of a 50-foot-wide new permanent right-of-way and 50 feet of temporary workspace. In most areas, about 25 feet of the construction right-of-way would overlap Transwestern's existing, previously disturbed right-of-way.

Between MPs 0.0 and 95.2, the Phoenix Lateral would be installed using a 120-foot-wide construction right-of-way consisting of a 50-foot-wide permanent right-of-way and 70 feet of temporary workspace. Within this milepost range, the temporary workspace would overlap the existing previously disturbed EPNG pipeline right-of-way by 15 feet for about 68.2 miles. For the remainder of the route (MPs 95.2 to 255.1), the Phoenix Lateral would be installed using a 100-foot-wide construction right-of-way consisting of a 50-foot-wide permanent right-of-way and 50 feet of temporary workspace. Within this milepost range, the entire 100-foot-wide construction right-of-way would overlap existing rights-of-way (including the APS and SRP powerline easements, and the City of Casa Grande Greenbelt Utility Corridor) for a total of 85.2 miles, the EPNG pipeline right-of-way by 50 feet for about 1.9 miles, and the AT&T fiber optic cable right-of-way by 15 feet for about 0.1 mile. The customer laterals would be installed using a 75-foot-wide construction right-of-way consisting of a 50-foot-wide permanent right-of-way and 25 feet of temporary workspace. Because the customer laterals would not be adjacent to existing rights-of-way, no overlap would be possible. Transwestern's typical right-of-way cross sections are in Appendix D.

During the scoping process, the Prescott National Forest requested that Transwestern narrow its proposed construction right-of-way to reduce impacts on Forest System lands. Through the Kaibab National Forest (MPs 0.8 to 9.8) and the Prescott National Forest (MPs 9.8 to 29.8, MPs 29.3 to 29.8, and MPs 65.0 to 65.9), the Phoenix Lateral would be adjacent to an existing EPNG pipeline with some minor deviations required for safe construction. To minimize impacts on Forest System lands, Transwestern proposes to overlap the EPNG right-of-way by 15 feet. By overlapping the EPNG right-of-way by 15 feet, construction equipment would be working within 10 feet of an existing high pressure natural gas pipeline. Transwestern investigated further overlap of the EPNG right-of-way and determined that safety concerns associated with operating equipment close to an existing pressurized natural gas pipeline would be too significant. In addition, blasting is anticipated in multiple locations during construction through the National Forests and would result in further potential impacts on worker safety if the proposed pipeline was to be installed any closer to the existing EPNG pipeline. During pipeline operation, equipment used to conduct maintenance activities and the potential interference with cathodic protection associated with the close proximity of two pressurized natural gas pipelines would create additional safety hazards. Transwestern cites these safety concerns as reasons that it does not propose further overlap of the EPNG right-of-way through the National Forests. Transwestern also investigated the potential of reducing its construction right-of-way by eliminating space for an equipment passing lane through selected areas. However, Transwestern maintains that given the dynamic nature of construction, it would be difficult to anticipate the locations where equipment would need to pass and, therefore, does not propose to eliminate the passing lane from its proposed construction right-of-way.

In addition to the construction right-of-way, Transwestern has identified temporary extra workspaces that would be required for staging areas and construction at waterbodies, roads, and railroads, and in areas of steep slopes and rugged terrain. The approximate locations and sizes of temporary extra workspaces identified by Transwestern are listed in table E-1 in Appendix E.

2.2.2 Aboveground Facilities

Modifications at existing and construction of new aboveground facilities associated with the proposed project would affect 14.5 acres of land, all of which would be permanently converted to industrial uses for operation of these facilities.

Modifications at the Bloomfield Compressor Station, including the relocation of an existing pig launcher from the existing San Juan Lateral to this site, would take place within the existing fenceline of this facility and would not require any additional land for construction or operation. Similarly, the installation of pressure control valves at the Seligman Compressor Station No. 1 would also occur within the existing fenceline of the facility and not require any additional land for construction or operation.

Transwestern would require about 2.5 acres of land for construction and operation of the proposed Ash Fork Facility. In addition, about 7.2 acres would be required for construction and operation of the nine proposed meter stations along the Phoenix Lateral. These include the SWG Sun Valley North, SWG Sun Valley South, APS Redhawk, Entegra Gila River, SWG Rainbow Valley, SRP Desert Basin, APS Sundance, EPNG Pinal County, and EPNG East Valley Lateral Meter Stations. Another 1.0 acre would be required for construction and operation of the SWG New Florence and SWG Germann Meter Stations along the EPNG East Valley Lateral and would not affect additional land. These meter station sites would range in size from 0.5 to 2.6 acres.

Construction of the three taps to UNS (i.e., UNS Tap, Chino Valley; UNS Tap, Prescott Valley Airport; and UNS Tap, Prescott South) and the EPNG Gila Bend Tap for potential future interconnects would occur within the proposed permanent right-of-way of the Phoenix Lateral. These facilities would be maintained as fenced and graveled sites within the permanent right-of-way.

The removal of a pig launcher and a pig receiver from the existing San Juan Lateral would not affect additional land beyond what is required to construct and operate the proposed Loop B. Of the new pig launcher/receiver facilities proposed (two launchers and two receivers associated with the Phoenix Lateral and four launchers and one receiver associated with the customer laterals), only one facility (the launcher associated with the APS Redhawk Lateral) would affect additional land (0.9 acre). The remaining launcher/receiver facilities would occur entirely within the permanent right-of-way or be collocated with aboveground facilities and would not require additional land.

No valves are proposed for the San Juan Lateral Loops. Of the 27 valves proposed for the Phoenix Lateral, Valves-95, -239, and -250 would affect additional land (0.9 acre total) outside the permanent right-of-way. Valve-0 would be installed within the Ash Fork Facility and Valve-255 would be installed within the EPNG East Valley Lateral Meter Station site. The remaining 22 valves would be installed within the permanent right-of-way and would not require additional land. The four remote blowdown valves would affect 2.0 acres of additional land. Valve sites would be maintained as fenced and graveled sites.

2.2.3 Pipe Storage and Contractor Yards and Borrow/Disposal Areas

To support construction activities, Transwestern proposes to use seven pipe storage and contractor yards on a temporary basis. The use of these sites would temporarily affect about 310.2 acres of land. The sizes, locations, land use, and land ownership of the proposed yards are listed in table 2.2.3-1. These areas consist of rangeland or previously disturbed, developed land. Figures depicting the pipe storage and contractor yards are included in Appendix B.

In addition, nine areas totaling 186.8 acres would be used as borrow areas to provide padding and backfill material in areas of shallow bedrock or for the disposal of surplus rock and debris. The sizes, locations, land use, and land ownership of these borrow/disposal areas are listed in table 2.2.3-1. These areas consist of previously disturbed, developed land. Figures depicting the borrow/disposal areas are included in Appendix B.

TABLE 2.2.3-1

Pipe Storage and Contractor Yards and Borrow/Disposal Areas Associated with the Phoenix Expansion Project

Facility/Site	Size (acres)	County, State	Associated Pipeline Facility and Nearest Milepost	Land Use	Land Ownership [a]
Pipe Storage and Contractor Yards					
	51.3	McKinley, New Mexico	San Juan Lateral Loops A and B/87.8	Developed (disturbed), previously used for the San Juan 2005 Expansion Project	NN
Drake Pipe Storage Yard	37.2	Yavapai, Arizona	Phoenix Lateral/16.5	Rangeland (scrub-shrub grassland)	PR
Greyhound Pipe Storage/Contractor Yard	10.7	Yavapai, Arizona	Phoenix Lateral/87.5	Developed (paved)	PR
Lake Pleasant Highway 74 Pipe Storage/Contractor Yard	29.6	Maricopa, Arizona	Phoenix Lateral/109.0	Developed (paved)	ASL
Landfill Pipe Storage/ Contractor Yard	72.4	Maricopa, Arizona	Phoenix Lateral/127.8	Rangeland (desert shrub)	ASL
Webb Pipe Storage/Contractor Yard	31.8	Pinal, Arizona	Phoenix Lateral/145.0	Rangeland (cultivated)	PR
Randolph Yard and Siding	77.2	Pinal, Arizona	Phoenix Lateral/255.1	Rangeland (desert shrub)	PR
Pipe Storage and Contractor Yards Total	310.2				
Borrow/Disposal Areas					
Pad Dirt Borrow and Rock Disposal Site/Kaibab #1	85.0	Yavapai, Arizona	Phoenix Lateral/2.0	Developed (disturbed)	KNF
Rock Disposal Site/Kaibab #2	6.7	Yavapai, Arizona	Phoenix Lateral/4.0	Developed (disturbed)	KNF
Pad Dirt Borrow and Rock Disposal Site/Kaibab #3	4.0	Yavapai, Arizona	Phoenix Lateral/7.9	Developed (disturbed)	KNF
Rock Disposal Site	10.6	Yavapai, Arizona	Phoenix Lateral/20.0	Developed (disturbed)	PR
Pad Dirt Borrow and Rock Disposal Site	29.3	Yavapai, Arizona	Phoenix Lateral/31.0	Developed (disturbed)	PR
Rock Disposal Site	42.1	Yavapai, Arizona	Phoenix Lateral/33.0	Developed (disturbed)	PR
Rock Disposal Site	2.7	Yavapai, Arizona	Phoenix Lateral/58.3	Developed (disturbed)	PR
State #1 Rock Disposal Site	1.2	Yavapai, Arizona	Phoenix Lateral/61.1	Developed (disturbed)	ASL
State #2 Rock Disposal Site	5.2	Yavapai, Arizona	Phoenix Lateral/61.1	Developed (disturbed)	ASL
Borrow/Disposal Areas Total	186.8				

[a] NN = Navajo Nation.
PR = Private.
ASL = Arizona State Land.
KNF = Kaibab National Forest.

2.2.4 Access Roads

Transwestern proposes to primarily use existing roads to temporarily access the right-of-way during construction. Many of these existing access roads would require some improvement (grading or widening) to move equipment and materials to the construction right-of-way. It would also be necessary to construct some new access roads to temporarily access the right-of-way during construction.

Improvements/modifications and the construction of new access roads would affect about 1,093.2 acres of land. Of this total, about 328.1 acres of land would be retained as permanent access roads to access aboveground facility sites for the life of the project. The locations, conditions, lengths, and acres of the proposed access roads are listed in table E-2 in Appendix E. New access roads and roads that would be widened beyond the existing footprint would need to be surveyed and cleared for cultural resources. Previously disturbed roads that would be graded would not require cultural resources survey and clearance.

Transwestern has no plans to maintain a permanent road on the right-of-way for operation and maintenance of the pipeline facilities. However, Transwestern would maintain access to all portions of the permanent right-of-way by four-wheel drive vehicles in order to conduct emergency and periodic maintenance. Transwestern has stated that it would develop and implement a post-construction schedule of maintenance for access roads on Forest System lands (see section 4.2.3). In section 4.7.4.1, we have recommended that Transwestern develop and implement a post-construction schedule of maintenance for access roads on BLM-managed lands as well.

2.3 CONSTRUCTION PROCEDURES

The Phoenix Expansion Project would be designed, constructed, tested, and operated in accordance with all applicable requirements included in the DOT regulations in Title 49 CFR Part 192,[1] *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*; and other applicable federal and state regulations, including U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) requirements. These regulations are intended to ensure adequate protection for the public and to prevent natural gas pipeline accidents and failures. Among other design standards, Part 192 specifies pipeline material and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

To reduce construction impacts, Transwestern would implement its project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (UECRM Plan) in upland areas (see Appendix F) and its project-specific Wetland and Waterbody Construction and Mitigation Procedures (WWCM Procedures) for construction across wetlands and waterbodies (see Appendix G). Transwestern's UECRM Plan and WWCM Procedures are based on the mitigation measures contained in the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (FERC Plan) and Wetland and Waterbody Construction and Mitigation Procedures (FERC Procedures).[2] In some cases, however, alternative measures to the FERC Plan and Procedures have been requested to reflect measures that are relevant to construction in the arid environment of the project area. Transwestern has requested alternative measures to protect soils and wetland resources. Transwestern has not requested any alternative measures to protect surface water resources; therefore, its WWCM Procedures are identical to the FERC Procedures for waterbody crossings. In most instances, Transwestern's UECRM Plan and WWCM Procedures provide an equal or greater level of environmental protection as the FERC Plan and Procedures. Transwestern's UECRM Plan and WWCM Procedures and, where applicable, the differences between these plans and the FERC Plan and Procedures are discussed in sections 4.2.2, 4.3.2.2, and 4.3.4.2.

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[1] Pipe design regulations for steel pipe are contained in subpart C, Part 192. Section 192.105 contains a design formula for the pipeline's design pressure. Sections 192.107 through 192.115 contain the components of the design formula, including yield strength, wall thickness, design factor, longitudinal joint factor, and temperature derating factor, which are adjusted according to the project design conditions, such as pipe manufacturing specifications, steel specifications, class location, and operating conditions. Pipeline operating regulations are contained in subpart L, Part 192.

[2] The FERC Plan and Procedures are a set of construction and mitigation measures that were developed in collaboration with other federal and state agencies and the natural gas pipeline industry to minimize the potential environmental impacts of the construction of pipeline projects in general. The FERC Plan can be viewed on the FERC Internet website at http://www.ferc.gov/industries/gas/enviro/uplndctl.pdf. The FERC Procedures can be viewed on the FERC Internet website at http://www.ferc.gov/industries/gas/enviro/wetland.pdf.

Transwestern would also implement its project-specific Restoration Plan.[3] The Restoration Plan describes preconstruction planning, construction activities, noxious weed management measures, and post-construction monitoring and reporting efforts that would be implemented to minimize construction impacts and enhance successful revegetation in an arid environment. Additional discussion of the Restoration Plan is presented in section 4.2.2.

To avoid or minimize the potential for harmful spills and leaks during construction, Transwestern has developed Spill Prevention and Response Procedures (SPR Procedures) (see Appendix H). Transwestern's SPR Procedures describes spill prevention practices, procedures for emergency preparedness and incident response, and training requirements. Additional discussion of the SPR Procedures is presented in sections 4.3.1.4 and 4.3.2.2.

Transwestern has also prepared a Horizontal Directional Drill Plan (HDD Plan) (see Appendix I) for the San Juan River crossing that describes the horizontal directional drill (HDD) process and how it would be monitored. The HDD Plan also describes the agency notification procedures and the corrective action and cleanup procedures that would be followed in the event of an inadvertent release of drilling mud and the abandonment procedures that would be followed if it is necessary to abandon the drill hole. The criteria for determining whether the HDD could be successfully completed or whether it would be abandoned are also outlined in Transwestern's HDD Plan. Additional discussion of the HDD Plan is presented in section 4.3.2.3.

Other resource-specific plans (e.g., Blasting Procedure, Trenching and Wildlife Guidelines, Dust Control Plan, Fire Prevention and Suppression Plan, Forest Service Access Management Plan) that have been developed for the proposed project are discussed in detail in section 4.0.

All of Transwestern's mitigation plans are important components of the POD for the project, which is a document required by the BLM before issuance of the ROD that would be part of the BLM's Right-of-Way Grant for the crossing of federal lands (see section 1.2.2). The POD would be developed jointly by the BLM, the FS, and the BOR and would include all of the measures that are described in this EIS as well as additional site-specific stipulations that are determined by these agencies to be necessary on federal lands under their jurisdiction. Any additional site-specific measures included in the BLM/FS/BOR POD would not contradict the mitigation measures in this EIS.

2.3.1 General Pipeline Construction Procedures

This section describes the general procedures proposed by Transwestern for the construction of the pipeline facilities. Figure 2.3.1-1 shows the typical steps of cross-country pipeline construction. Transwestern would build the project in two overlapping phases. Transwestern plans to use three general construction crews "spreads" to construct the Phoenix Lateral, customer laterals, and associated aboveground facilities beginning in the fall of 2007. Transwestern would use one spread to construct the San Juan Lateral Loops beginning in early 2008. The anticipated dates and duration of construction for each phase are described in section 2.4.

Standard pipeline construction is composed of specific activities that make up the linear construction sequence. These operations collectively include survey and staking of the right-of-way; clearing and grading; trenching; pipe stringing, bending, and welding; lowering the pipeline into the trench; backfilling the trench; hydrostatic testing; and cleanup and restoration. The procedures

[3] This report is too voluminous to include in this EIS but can be viewed on the FERC Internet website at http://www.ferc.gov. Using the "eLibrary" link, select "General Search" from the eLibrary menu and enter the docket number excluding the last three digits in the "Docket Number" field (i.e., CP06-459). Be sure to select an appropriate date range. It is also available for public inspection at the FERC's Public Reference Room in Washington, DC (call (202) 502-8317 for instructions).

Transwestern would follow to conduct these activities are described below. In addition, Transwestern would use special construction techniques when constructing across roads, highways, railroads, rugged topography, waterbodies, wetlands, and residential areas; when blasting through rock; and when working adjacent to existing easements (see section 2.3.2).

Survey and Staking

Before the start of construction, Transwestern would complete land or easement acquisition. Transwestern would then mark the limits of the approved work area (i.e., the construction right-of-way boundaries and temporary extra workspaces) and the pipeline centerline, and flag the location of approved access roads. Existing utility lines and other sensitive resources would be located and marked to prevent accidental damage during pipeline construction.

Clearing and Grading

Immediately before clearing, fences would be modified and temporary gates installed to allow passage of project vehicles and construction equipment. Where it is necessary to cut fences to access the construction work area, a new corner-post would be set on each side of the construction work area and all existing wires attached to the corner posts before cutting the fence. Temporary wire gaps or gates may be installed and would be kept closed to contain livestock. In Arizona, temporary wire gaps or gates in pronghorn habitat on state or federal land would be constructed to standards approved by the AGFD to allow pronghorns the option of crossing under such fences so as to not fragment pronghorn habitat. Temporary fences on private land would be constructed in the same manner if landowner approval is received. Any fence that is removed would be replaced with fencing of similar or better quality.

The construction work area would be cleared and graded (where necessary) to provide a relatively level surface for trench excavating equipment and a sufficiently wide workspace for the passage of heavy construction equipment. Large obstacles such as trees, rocks, and logs would be removed. Transwestern would work with landowners or the land management agency to preserve large, mature trees and other specimens comprising the native desert vegetation community (specifically large ironwood trees and saguaro cacti), where possible. In areas where grading is not required, vegetation would be shredded using a flail mower (leaving the root systems intact). Shredded material would be preserved for subsequent respreading during cleanup and restoration. Larger trees and shrubs would be cut and preserved intact for use as vertical mulch during restoration activities. Noxious weeds cleared from the right-of-way would be burned if the material is considered sufficiently dry at the time of clearing. Burning, if necessary, would be conducted in such a manner as to minimize fire hazard and heat damage to surrounding vegetation. Transwestern has developed a Fire Prevention and Suppression Plan that includes procedures that would be followed to prevent fires and control and suppress fires that may result from construction activities. The Fire Prevention and Suppression Plan is provided in Appendix J.

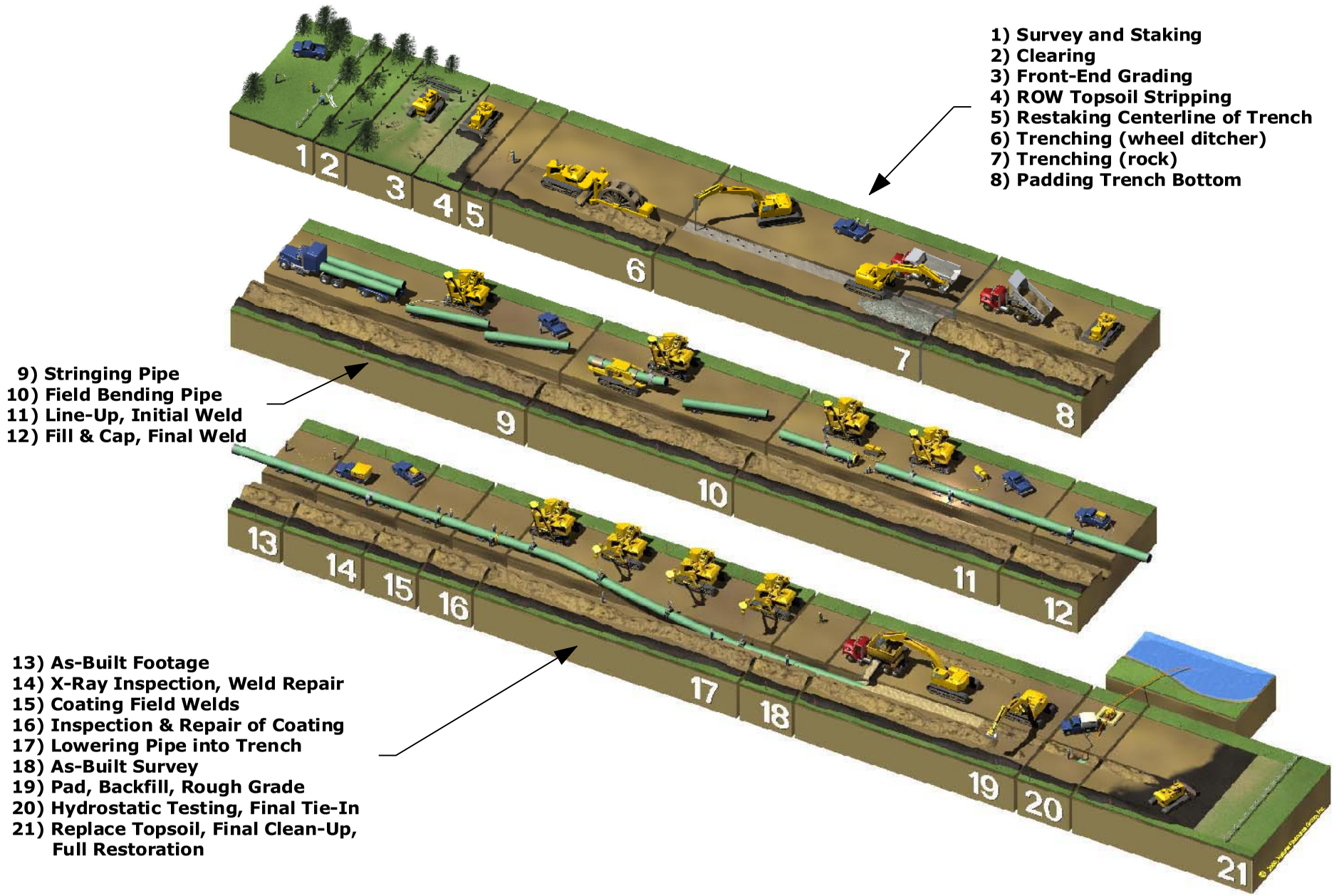


Figure 2.3.1-1
Phoenix Expansion Project
Typical Pipeline Construction Sequence

In actively cultivated or rotated croplands and pastures, residential areas, hayfields, and other areas at the landowner's or land management agency's request, up to 12 inches of topsoil would be stripped from either the full work area or from the trench and subsoil storage area. In undeveloped native habitats, where requested by the land management agency or landowner, the top 3 inches of soil containing the seedbank would be stripped from the full width of the construction right-of-way. Topsoil would be stockpiled separately from the trench spoil along the edge of the construction right-of-way for later spreading during restoration.

Trenching

The trench would be excavated to a depth sufficient to provide the minimum cover required by DOT specifications. Typically, the trench would be sufficiently deep to allow for about 3 feet of cover and wide enough to allow for about 4 to 6 feet of stable soils and rock. In areas with rock, the minimum cover would be 2 feet. In certain agricultural areas, and under flowing surface waters and roads, the depth of cover could be up to 5 feet. Spoil would typically be stored on the opposite side of the trench from the working side (i.e., the nonworking side), which in most cases is where the pipeline overlaps existing rights-of-way. The spoil piles would be kept separate from the topsoil piles. In areas where mechanical equipment cannot break up and loosen the bedrock, blasting may be required (see sections 2.3.2 and 4.1.3.5).

Because the open trench may affect wildlife movement and could result in entrapment of wildlife in the trench, Transwestern would follow the Trenching and Wildlife Guidelines adopted from the guidelines provided by the AGFD (see Appendix K). These guidelines require the installation of wildlife "escape ramps" in the open trench at least every 300 feet and at the end of each section of open trench and would require that the trench be monitored for entrapped wildlife at least daily and before the pipe is lowered into the trench and backfilling occurs (see section 4.5.1.2).

Pipe Stringing, Bending, and Welding

Steel pipe would be procured in 60- or 80-foot lengths (also referred to as joints), protected with an epoxy coating applied at the factory, and shipped to the pipe storage and contractor yards. The individual joints would be transported to the right-of-way by stringing truck and placed along the excavated trench in a single, continuous line or "strung." Individual joints would be placed on temporary supports or wooden skids and staggered to allow room for work on the exposed ends.

Individual sections of pipe would be bent where necessary to fit the contours of the trench, aligned, welded together into long strings, and placed on temporary supports along the edge of the trench. Welds would be inspected radiographically or ultrasonically to ensure structural integrity and compliance with the applicable DOT regulations. Those welds that do not meet established specifications would be repaired or removed. Once the welds are approved, the welded joints would be coated with a protective coating and the entire pipeline would be visually inspected for any faults, scratches, or other coating defects. Any damage or other faults would be repaired before the pipeline is lowered in. After the welding process is complete and before the pipeline is to be lowered into the trench, the small amount of uncoated pipe at each end of the pipes and the weld would be field coated with a fusion bonded epoxy coating for external corrosion protection.

Lowering-in and Backfilling

Before the pipeline is lowered in, the trench would be inspected to ensure that it is free of rocks and other debris that could damage the pipe or coating. In areas of rock, padding material such as sand, sandbags, or screened soil would be placed in the bottom of the trench. The pipeline would be lowered

into the trench, and trench breakers would be installed at specified intervals to prevent water movement along the pipeline. The trench would then be backfilled using the excavated materials. If the excavated material is rocky, clean fill or protective coating would be placed around the pipe before backfilling. Where padding material is needed, a padding machine would be used to screen excavated spoil. Where there is not sufficient padding material on site, borrow areas would be used to provide the necessary padding material. Generally, excavated rock would be used to backfill the trench to the top of the existing bedrock profile. Large rock not suitable for use as backfill material would be either scattered across the work area (with the landowner's permission) or hauled off the right-of-way and disposed of in an area approved by the appropriate agency. Transwestern has identified nine rock disposal areas where it proposes to dispose of excess rock. Three of these areas would also be used as borrow areas from which it would potentially obtain padding material. The sizes and locations of these borrow/disposal areas as well as land use and land ownership are listed in table 2.2.3-1. Figures depicting the borrow/disposal areas are included in Appendix B. All of these areas are located within the first 61.1-mile-long section of the Phoenix Lateral. Following backfilling, a small crown of material may be left over the trench to account for any future soil settling that might occur. Topsoil would not be used as padding material.

Hydrostatic Testing

After burial, the pipeline would be tested to ensure that the system is capable of withstanding the operating pressure for which it was designed. This procedure is called hydrostatic testing and is accomplished using pressurized water in the pipeline. The testing would be done in pipeline segments according to Transwestern's permits and DOT specifications (Title 49 CFR Part 192). The exact sequence and timing of hydrostatic testing would depend on the final schedule for construction (see section 2.4).

Water for testing Loop A would be obtained from the San Juan River. Transwestern anticipates using local well water to test Loop B. Approximately 16 miles of Loop B would be on Navajo Nation lands. Transwestern is working with the Navajo Nation Environmental Protection Agency to develop a hydrostatic test water discharge plan that would include details of the required volumes and exact discharge locations for the water.

Hydrostatic test water for the Phoenix Lateral and customer laterals would be obtained from two or more wells in Yavapai County, from surface water from the Central Arizona Project (CAP)/Waddell Canal or other nearby canals in Maricopa and Pinal Counties, and from effluent from the City of Casa Grande Waste Water Treatment Facility in Pinal County. The water obtained from the wells would be withdrawn and discharged in accordance with the requirements of the Arizona Department of Water Resources (AZDWR). Water from the CAP canals and the treatment plant are not regulated by the statutes of the AZDWR and can be discharged into any watershed.

Test water would contact only new pipe and no chemicals would be added. Test water would be pumped into the first test segment, pressurized to design test pressure, and maintained at that pressure for about 8 hours. If leaks are found, the leaks would be repaired, and the segment of pipe would be retested until specifications are met. After testing, the water would be discharged or pumped into the next test segment until the entire pipeline is tested. When completed, hydrostatic test water discharges would be conducted in accordance with the requirements of the applicable New Mexico, Navajo Nation, and Arizona National Pollutant Discharge Elimination System (NPDES) permits. Generally, discharge locations would be in upland areas adjacent to the pipeline right-of-way and may include discharge into ephemeral washes where appropriate and where allowed under the terms of the permits. Energy dissipation devices and sediment barriers would be installed as necessary to limit excessive flow and prevent erosion. All hydrostatic testing activities would be conducted in accordance with Transwestern's WWCM Procedures.

Additional discussion of hydrostatic testing, including the specific water volumes and energy dissipation devices that would be used, is included in section 4.3.3.1. The applicable permits are listed in table 1.6-1.

Cleanup and Restoration

Within 20 days of backfilling the trench (10 days in residential areas), all work areas would be final graded and restored to preconstruction contours and natural drainage patterns as closely as possible. Slopes would be re-established as near as practicable to preconstruction contours. Topsoil and subsoil would be tested for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Severely compacted agricultural areas would be plowed with a paraplow or other deep tillage implement, and appropriate soil compaction mitigation would be conducted in severely compacted residential areas. In selected areas of native desert habitats (rangeland), Transwestern proposes to alleviate compaction by ripping soils to a depth of between 12 and 24 inches depending on the site-specific recommendations included in its Restoration Plan. Surplus construction material and debris would be removed and disposed of at commercial landfills. Rock generated by construction activities would be disposed of in the following ways: placed in the trench above the padding material, used for side-hill cut restoration, used for water diversion berm construction on slopes, used to construct vehicular control barriers, dispersed into the temporary workspace corridor, and if necessary, dispersed within the permanent easement but not within 10 feet of the centerline of the pipeline. If rock remains after the above uses are exhausted, the excess material would be transported to an approved rock disposal site (see table 2.2.3-1). Transwestern would limit all rock disposal to previously disturbed areas within each site. The rocks would be spread out within the site so they do not extend higher than the disposal area rim and covered with soil from within the previously disturbed area of the site. Rock dispersed over the right-of-way would be left in such a manner as to maintain a natural appearance (i.e., not windrowed or piled) and gaps would be left every 100 to 150 feet to allow access by fire management crews. Access roads would be regraded and restored to original condition unless the landowner requests otherwise.

Transwestern would conduct restoration activities in accordance with its Restoration Plan. The topsoil would be evenly spread over the right-of-way to help facilitate natural revegetation. Seeding would be conducted in selected areas based on the site-specific recommendations in the Restoration Plan. The woody material that had been removed during clearing and preserved along the right-of-way would be respread over the disturbed areas. Areas of soil disturbance on slopes greater than 10 percent would be imprinted with a “sheep’s-foot” roller or other methods to provide micro-catchment areas for seed retention and improve water infiltration. Additional discussion of restoration activities is presented in sections 4.2.2, 4.2.3, and 4.4.2.

After completion of construction and hydrostatic testing, the pipeline would be cleaned and dried using internal tools (pigs) that are propelled through the pipeline. Once cleaned, dried, and purged of air, the pipeline would be packed with natural gas. Pipeline markers and/or warning signs would be installed along the pipeline centerline at intervals to identify the location of the pipe.

2.3.2 Special Construction Techniques

Construction across roads, highways, railroads, rugged topography, waterbodies, wetlands, and residential areas; blasting through rock; and working adjacent to existing easements may require special construction techniques. These are briefly described below. Applicable permits are listed in table 1.6-1.

Road, Highway, and Railroad Crossings

Construction across paved and unpaved roads, highways, and railroads would be in accordance with the requirements of applicable road and railroad crossing permits and approvals. These features would either be bored or open cut. Boring requires the excavation of pits on both sides of the feature to be crossed to the depth of the pipeline, the installation of boring equipment, and the boring of a hole under the feature at least equal to the diameter of the pipe. Once the hole is bored, a prefabricated pipe section would be pushed through the borehole. For long crossings, additional pipe sections may be required. These additional sections usually would be welded to the first section of pipe in the bore pit before being pushed through the borehole.

Transwestern would design all railroad and road crossings in accordance with Title 49 CFR Part 192 *Transportation of Natural Gas by Pipeline: Minimum Federal Safety Standards*, which specifies a minimum depth of cover of 3 feet in road ditches.

There would be little or no disruption to traffic at road or railroad crossings that are bored. Where feasible and practical, traffic would be detoured around the work site. If no reasonable detour is feasible, road closure signs would be posted sufficiently far from the construction site to allow traffic to select alternate means around the work site. Construction of the crossing and restoration of the road would be completed as quickly as possible. Construction at each open-cut road crossing typically would be completed in 1 day, and would be anticipated to have a significant impact on local traffic.

Rugged Topography

The Phoenix Expansion Project would cross areas of rugged topography (see section 4.1). In these areas of side-slopes and rolling terrain, leveling would be required to establish safe working conditions on the construction right-of-way. In many side-slope areas, this would require using "two-tone" construction techniques, in which the contractor would grade the working side of the right-of-way such that it has two levels or tones that parallel the trench. None of these two-tone areas have been identified in areas where topsoil segregation would be required. In certain areas, grading of the total construction right-of-way may be limited (less grading on the travel side) to minimize disturbance. Transwestern intends to use earth berms in lieu of sandbags to support the pipe in rocky areas. In specific areas of steep vertical slopes, a crew separate from the mainline crew may install the pipeline and restore the right-of-way.

Following clearing activities in these areas, grading tractors would build a level grade for the excavation of the trench, the stringing of the pipe, and movement of equipment and vehicles. Spoil from the trench area may be used to build a travel lane for the passage of equipment. The pipeline trench would be constructed along the newly graded right-of-way. Additional spoil may be stored in spoil storage areas across from the trench. For two-toned rights-of-way, the height of the construction-side tone is usually as close to the height of the trench as possible and the travel tone would be higher or lower than the height of the construction tone, depending on the area's natural grade. The two-tone approach would be used to reduce the amount of dirt and rock that would be moved and its associated environmental impacts.

The steep slope restoration would follow immediately after pipeline installation to minimize the potential for erosion. Following backfill and final grading, the original contours would be restored as nearly as practicable and stabilized following the measures in Transwestern's UECRM Plan (see Appendix F).

Waterbody and Wetland Crossings

The pipelines associated with the proposed project would cross 8 perennial waterbodies (the San Juan River, 5 tributaries to the San Juan River, the Verde River, and the Enterprise Canal) and approximately 791 intermittent or ephemeral waterbodies, most comprising desert washes. These waterbodies are listed in table L-1 in Appendix L. Sixty-three waterbodies would be crossed by access roads associated with the project (see table L-2 in Appendix L). All of the waterbodies that would be crossed by project access roads are ephemeral waterbodies. Fishery resources in the waterbodies crossed by the proposed pipelines and project access roads would be limited to the eight perennial waterbody crossings. All waterbody crossings would be installed in accordance with federal, state, and local permits (see table 1.6-1).

The majority of the intermittent and ephemeral waterbodies are expected to be dry at the time of construction. Transwestern proposes to cross intermittent and ephemeral waterbodies that are dry at the time of construction using the dry open-cut method. The dry open-cut method involves standard upland cross-country construction techniques as described in section 2.3.1. Measures that Transwestern would implement to minimize the potential for construction across intermittent and ephemeral waterbodies to occur during runoff events are described in section 4.3.2.2.

Intermittent and ephemeral waterbodies that are flowing at the time of construction would be crossed using the wet open-cut method. Some of the perennial waterbodies may also be crossed using the wet open-cut method. The wet open-cut method involves trench excavation, pipeline installation, and backfilling in a waterbody without controlling or diverting streamflow (i.e., the stream would flow through the work area throughout the construction period). Figure 2.3.2-1 depicts the typical wet open-cut crossing method. With the wet open-cut method, the trench would be excavated across the waterbody using trackhoes or draglines working within the waterbody, on equipment bridges, and/or from the streambanks. The trench spoil would be typically stored in an upland area adjacent to the waterbody.

Throughout in-stream excavation operations, typically a trench plug (consisting of compacted or unexcavated native soil) would be left in place between the upland trench and the waterbody. This plug would prevent migration of water into upland portions of the pipeline trench and keep accumulated trench water out of the waterbody. The trench plugs would be left in place until the pipe is ready for installation.

Once trench excavation across the entire waterbody is complete, a prefabricated section of pipe would be promptly lowered into the trench. The trench would then be backfilled with the previously excavated material, and the pipe section tied-in to the pipeline. Following pipe installation and backfilling, the streambanks and channel would be re-established and stabilized. In accordance with the WWCM Procedures (see Appendix G), the streambanks would be restored to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector (EI).

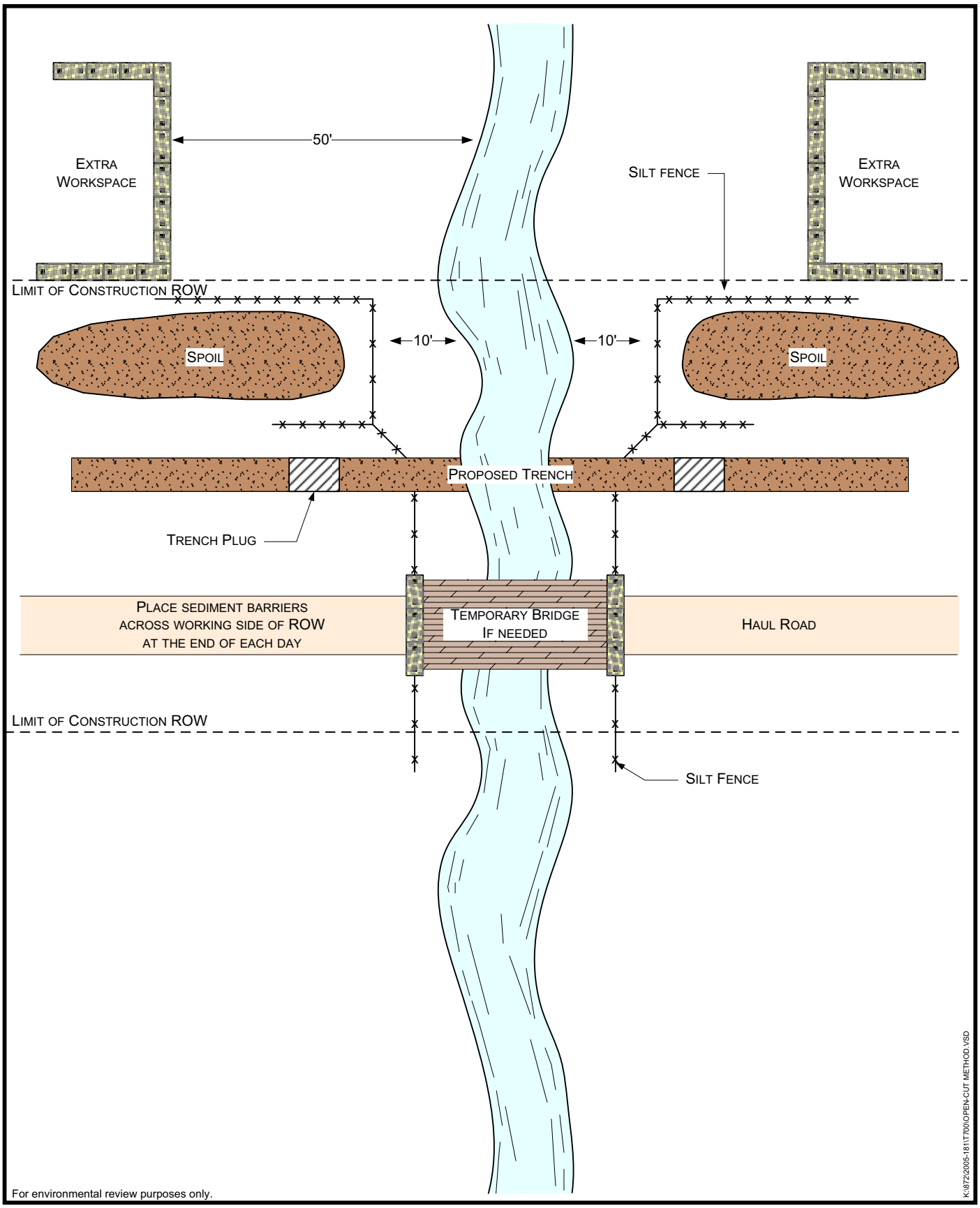


Figure 2.3.2-1
Phoenix Expansion Project
Typical Wet Open-Cut Method
Waterbody Crossing

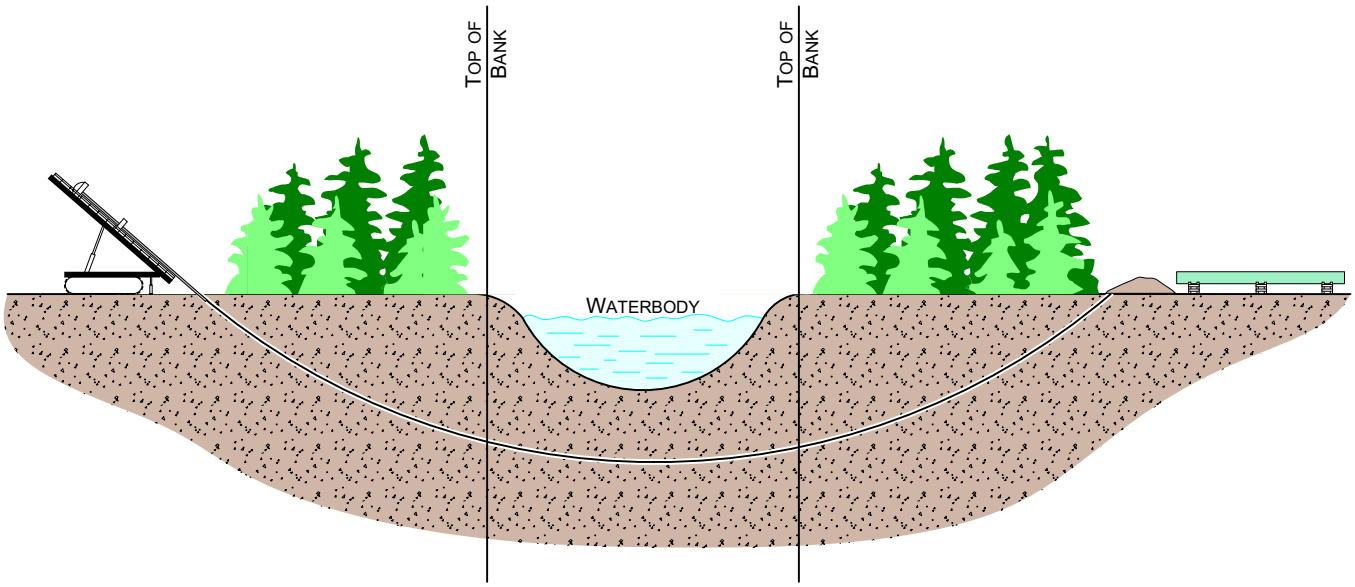
Transwestern proposes to cross the San Juan River using the HDD method. The HDD method is a specialized crossing method that has the potential to avoid impacts on waterbodies but requires suitable geology, topography, and space to accommodate the bending radius of the pipe. This technique involves drilling a pilot hole under the waterbody and banks, then enlarging that hole through successive reamings until the hole is large enough to accommodate the pipe. Throughout the process of drilling and enlarging the hole, a slurry made of naturally occurring non-toxic materials, such as bentonite clay and water, would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and hold the hole open. This slurry is referred to as drilling mud. Pipe sections long enough to span the entire crossing would be staged and welded along the construction work area on the opposite side of the river and then pulled through the drilled hole. As shown on figure 2.3.2-2, use of the HDD method avoids disturbance to both the waterbody and the vegetation on both sides of the crossing.

If the HDD of the San Juan River is not successful, Transwestern proposes to install the crossing using a variation of the wet open-cut method. The wet open-cut crossing plan for the San Juan River would involve installing an aqua dam on the south half of the river (Stage I) in a horseshoe pattern to allow adequate space to enclose the excavated material and create a dry workspace. Fish trapped within the enclosure would be transferred back to the river and the enclosure within the aqua dam would be dewatered. After dewatering, probing or test holes would be used to determine if blasting is required and drilling and blasting would be completed if blasting is necessary. The trench would be excavated and all trench spoil would be stored within the aqua dam enclosure. A steel casing pipe would be installed in the trench at the design grade, and the trench and enclosed area would be backfilled. The aqua dam would be removed and reinstalled on the north half of the river (Stage II) in a similar manner to Stage I, and construction activities would proceed in the same order. Before backfill of the trench to the north shoreline is completed, the pipeline would be pulled through the casing pipe.

Transwestern proposes to cross the Verde River using the flume method, which involves conveying the streamflow through the crossing area through one or more flume pipes placed in the waterbody. The in-stream work area would be isolated by a system of sandbag dams to create a relatively dry work site for trenching and installation of the pipeline. Sediment control structures would be installed and maintained throughout construction, including downgradient of the work area and between the spoil storage area and the water's edge. Hard or soft trench plugs would be maintained in the trench until just prior to installation of the pipe crossing section. The typical flume crossing method is depicted on figure 2.3.2-3.

Once trench excavation across the entire waterbody is complete, the pipe would be installed, the trench backfilled, the pipe section tied-in, and the streambanks and channel re-established and stabilized as discussed above for the wet open-cut crossing method.

The Enterprise Canal and other water supply and irrigation canals would be crossed using the conventional bore method. The bore method is similar to the HDD method in that the pipeline is installed beneath the feature without surface disturbance. As described above for road crossings, boring requires excavation of pits on each side of the feature. During a standard boring operation, spoil from the bore is carried into the pit as the crossing is being completed and then removed by trackhoes to provide room for the pipe to be welded and eventually pulled through the bore hole.



For environmental review purposes only.

K:\872\2005-181\T700\HDD CONFIGURATION.VSD

Figure 2.3.2-2
Phoenix Expansion Project
Conceptual Horizontal Directional Drill
Waterbody Crossing

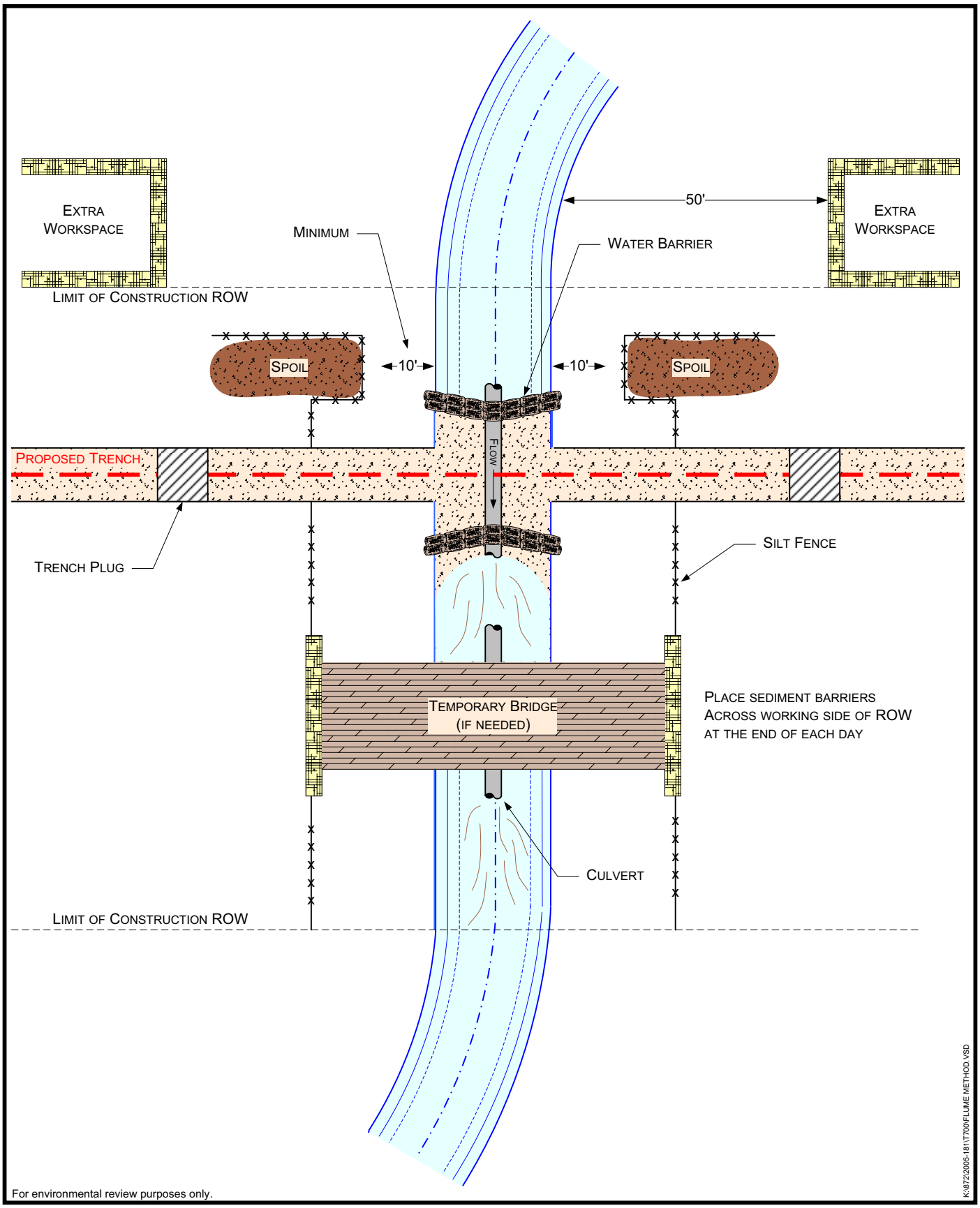


Figure 2.3.2-3
Phoenix Expansion Project
Typical Flume Method
Waterbody Crossing

Transwestern has conducted wetland delineations of all areas where survey permission was granted. Based on these surveys, the project would cross four wetlands under the jurisdiction of the COE. These four wetlands are emergent wetlands that occur along the Phoenix Lateral. Transwestern would cross all wetlands in accordance with the methods outlined in its WWCM Procedures (see Appendix G). The pipeline would be installed with a minimum depth of cover of 3 feet in these wetlands.

Sections 4.3.3 and 4.3.4 provide additional discussion of waterbodies and wetlands crossed by the project and include an analysis of Transwestern's crossing plans.

Residential Areas

Construction through or near residential areas would be done in a manner to ensure that all construction activities minimize any adverse impacts on residences and that cleanup is prompt and thorough. Access to homes would be maintained, except for the brief periods essential for laying the new pipeline.

For the residences or business establishments that are greater than 25 feet but less than 50 feet from the edge of the construction right-of-way, Transwestern would: install safety fence at the edge of the construction right-of-way for a distance of 100 feet on either side of the residence/business; attempt to maintain a minimum distance of 25 feet between any residence/business and the edge of the construction work area for a distance of 100 feet on either side of the residence/business; and attempt to leave plantings and landscaping intact within the construction work area unless the landscaping interferes with pipeline construction or presents unsafe working conditions. Private property such as fences, gates, driveways, and roads disturbed by pipeline construction would be restored to original or better condition upon completion of construction activities.

Transwestern would prepare and follow site-specific residential and structural implementation plans to minimize disruption and to maintain access to the residences, businesses, and structures within 50 feet of the construction work area associated with the pipelines. These plans are described in detail in section 4.7.3.1.

Equipment would be maintained in good operating condition to minimize noise, and dust generated by construction activities would be controlled in accordance with Transwestern's Dust Control Plan (see section 4.10.3 and Appendix M).

Blasting

Blasting would be required for the Phoenix Expansion Project where solid rock makes other trenching methods impractical. Along the San Juan Lateral Loops, blasting is anticipated to be necessary at various locations between MPs 1.6 and 8.9 on Loop A and MPs 73.2 and 87.6 on Loop B. Some of the blasting on Loop A would be on BLM-managed land; the majority of the blasting on Loop B would be on Navajo Nation land. Along the Phoenix Lateral, blasting is anticipated to be necessary between MPs 0.0 and 30.3, MPs 31.6 and 31.8, MPs 38.1 and 38.4, MPs 42.7 and 43.8, MPs 47.9 and 50.3, MPs 53.4 and 74.8, MPs 77.2 and 115.9, and MPs 172.9 and 190.0. Blasting in these locations would occur on ASLD, BLM-managed, and private lands. No blasting is anticipated to be necessary along the customer laterals. Where blasting is necessary, all landowners with structures and wells within 150 feet of the blast site and landowners with septic systems directly abutting the construction work area would be offered pre-blast tests and, upon request, a post-blast inspection would be performed by a qualified independent contractor. Transwestern would evaluate any landowner complaints of damage associated with blasting and would negotiate a settlement with the landowner to have all damages repaired or replaced.

All blasting activities would be conducted only during daylight hours and in strict compliance with the specifications in Transwestern's Blasting Procedure (see Appendix N). These specifications contain procedures for complying with applicable federal, state, and local safety and environmental regulations, codes, and standards for the use, storage, and transport of explosives. In accordance with these specifications, every reasonable precaution would be taken to notify landowners and residents within 1,000 feet of the right-of-way, owners of adjacent facilities (pipelines, cables, powerlines, etc.), and contractor and company employees in advance of blasting activities. Additional discussion of blasting, including details of the notification and warning procedures, is presented in section 4.1.3.5.

Working Adjacent to Existing Easements

The San Juan Lateral Loops and Phoenix Lateral would be installed within, or adjacent to, other pipeline and powerline easements for the majority of their lengths. To the extent possible, heavy equipment would not work directly over active pipelines. When construction must be conducted parallel to, between, or over active pipelines identified through the "One Call" system, standard operating procedures of the pipeline operator would be used. These standard procedures include:

- locating the pipeline by potholing using a probe (vacuum pump) or hand excavation;
- determining the depth of cover over the existing pipeline;
- providing sufficient cover over the existing pipeline by using earth or mats to ensure safe bridging of construction equipment weight; and
- ensuring the pipeline remains supported when crossing under it becomes necessary.

For construction that would occur within a powerline easement, all construction workers would receive "Red Zone" training, which informs them of the safe working distances from electrical conductors, grounding of equipment, and actions to be taken if the "Red Zone" is violated. The "Red Zone" is the area in the vicinity of the powerline that represents a potential hazard to the construction crew. Plans would be in place to handle an emergency should it develop. The power company operator would be notified of the time frame that pipeline construction would occur on its easement. Construction equipment used while working under and parallel to powerlines would be chained or otherwise restrained from exceeding construction equipment boom heights that would violate the "Red Zone."

2.3.3 Aboveground Facility Construction Procedures

The proposed modifications at the existing compressor stations would involve earth disturbance within the station yards. Other construction activities and storage of construction materials and equipment would be confined to the station yard or adjacent property owned by Transwestern. At the existing Bloomfield Compressor Station, earth disturbance would be necessary to install a section of 36-inch-diameter pipeline to connect Loop A to the compressors and install the relocated pig launcher. For the facilities at the existing Seligman Compressor Station No. 1, earth disturbance activities would be required for the installation of one pressure control valve and one pressure monitor valve with each bypass valve.

Construction of the other proposed aboveground facilities, including the Ash Fork Facility, meter stations, valves, and pig launchers/receivers, would involve site clearing and grading as needed to establish appropriate contours for the facilities. Following installation of the equipment, the sites would be graveled, as necessary, and fenced. The valves would be installed at intervals specified by the DOT or as needed for customer deliveries as shown in table 2.1.2-2.

Any exposed steel pipe and appurtenances would be externally coated with paint to mitigate the effects of atmospheric corrosion. This coating would be applied in the field in a multi-step process that includes cleaning the pipe exterior, creating an anchor pattern to enhance the adhesion of the paint material, applying the paint, and finally allowing the paint to cure and harden. All aboveground facilities would be painted to blend with the surrounding landscape. On BLM- and FS-managed lands, Transwestern is conducting visual resource assessments and is consulting with the BLM and the FS to develop additional mitigation measures that would further reduce visual impacts (see section 4.7.7).

2.4 CONSTRUCTION SCHEDULE

As previously discussed, the proposed project would be constructed in two overlapping phases. The first phase would involve construction of the Phoenix Lateral, customer laterals, and associated aboveground facilities including the Ash Fork Facility. Construction of these facilities is expected to occur over a 12- to 13-month period beginning in the fall of 2007. The 42-inch-diameter pipeline (MPs 0.0 to 95.2), customer laterals, and meter stations are expected to be completed in mid-2008, when construction of the 36-inch-diameter pipeline (MPs 95.2 to 255.1) would commence. Transwestern estimates construction of the 36-inch-diameter pipeline would be completed in the fall of 2008.

The second phase would involve the construction of the San Juan Lateral Loops A and B, the modifications at the Bloomfield Compressor Station and the Seligman Compressor Station No. 1, the relocation of the pig launcher from Loop A to the Bloomfield Compressor Station, and the removal of one pig launcher and one pig receiver. Transwestern estimates that these facilities would be constructed over a 3-month period beginning in early 2008.

Additional details of Transwestern's construction plans and workforce are provided in section 4.8.1.

2.5 ENVIRONMENTAL COMPLIANCE INSPECTION AND MITIGATION MONITORING

As the lead federal agency for the project, the FERC may impose conditions on any Certificate granted for the 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 project (see sections 4.0 and 5.0). The FERC staff will 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 Phoenix Expansion Project. If it approves the project, the FERC will require Transwestern to implement the construction procedures and mitigation measures that Transwestern has proposed as part of the project unless specifically modified by other Certificate conditions.

In accordance with the Mineral Leasing Act, the BLM would require Transwestern to furnish a bond, or other security, to ensure that Transwestern would comply with the terms and conditions of the BLM's Right-of-Way Grant. The environmental inspection and mitigation monitoring program for the Phoenix Expansion Project would address requirements placed on the project by the FERC, the BLM, the FS, and other applicable agencies. Full-time third-party Compliance Monitors representing the FERC, the BLM, and the FS would be present on each construction spread to monitor compliance with project mitigation measures and requirements. This would include verifying and documenting that the appropriate monitoring is being conducted at sensitive areas (e.g., at cultural resources sites). Other federal and state agencies would conduct oversight of inspection and monitoring to the extent determined necessary by the individual agency.

To ensure that construction of the proposed facilities would comply with mitigation measures identified in Transwestern's applications, the FERC Certificate, the BLM/FS/BOR POD, and other permits, Transwestern would include in its construction work scope and specifications all relevant environmental-related requirements known at the time of execution of the construction contracts. Transwestern would incorporate relevant requirements identified after execution of construction contracts via change orders or other contractual mechanisms. In this manner, compliance with the terms of the construction contract would ensure compliance with the applicable environmental requirements. Contractors would receive and be required to comply with relevant permits; mitigation plans; Transwestern's Restoration Plan; and a Construction Drawing Package containing drawings designated as being approved for construction.

For purposes of quality assurance and compliance with mitigation measures, other applicable regulatory requirements, and project specifications, Transwestern would be represented by a Chief Construction Inspector. At least one EI would be present on each construction spread during construction and restoration. At a minimum, the EI would be responsible for:

- ensuring compliance with the requirements of Transwestern's UECRM Plan, WWCM Procedures, Restoration Plan, other resource-specific plans, the environmental conditions of the FERC Certificate, the stipulations of the BLM/FS/BOR POD, the mitigation measures proposed by Transwestern (as approved and/or modified by the FERC 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, or areas with special requirements along the construction work area and confirming that the appropriate resource monitoring is being conducted to protect these areas;

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

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

- verifying that trench 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;

- ensuring that soils are ripped to the appropriate depth in native desert habitats (rangeland) at the site-specific locations identified in the Restoration Plan;

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

- 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;

- 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, the stipulations of the BLM/FS/BOR POD, and the mitigation measures proposed by Transwestern in the application submitted to the FERC, 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.

The EI would have authority to stop activities that violate the environmental conditions of the FERC Certificate, the BLM/FS/BOR POD, other federal and state environmental permit conditions, or landowner requirements. The EI would also have the authority to require corrective action to achieve environmental compliance.

Transwestern would develop an environmental training program tailored to the proposed project and its requirements. The program would be designed to ensure that: (1) qualified environmental training personnel provide thorough and well-focused training sessions regarding the environmental requirements applicable to the trainees' activities; (2) all individuals receive environmental training before they begin work on the right-of-way; (3) adequate training records are kept; and (4) refresher training is provided as needed to maintain high awareness of environmental requirements.

During construction, full-time third-party Compliance Monitors representing the FERC, the BLM, and the FS as discussed above would be present on each construction spread to conduct daily ongoing inspections of construction activities and mitigation measures and provide regular feedback on compliance issues to the FERC, Transwestern, and Transwestern's environmental inspection team**.** Construction progress and environmental compliance would be tracked and documented by the Compliance Monitors in daily and weekly reports. The Compliance Monitors would report directly to a Compliance Manager who would report directly to the FERC Project Manager. Other objectives of the mitigation/compliance monitoring program would be to:

- facilitate the timely resolution of compliance-related issues in the field;

- provide continuous information to the FERC, the BLM, and the FS regarding noncompliance issues and their resolution; and

- review, process, and track construction-related variance requests.

It is expected that these variance requests would be necessary because during construction, unforeseen or unavoidable site conditions can result in the need for changes from approved mitigation measures and construction procedures. Additionally, the need for route realignments, extra workspaces, or access roads outside of the previously approved construction work area may arise. Changes to previously approved mitigation measures, construction procedures, and construction work areas would require some level of regulatory approval and would be handled in the form of variance requests to be submitted by Transwestern and reviewed and approved or denied by the agencies with the delegation of some authority to the third-party Compliance Monitors.

After construction, Transwestern would conduct follow-up inspections of all agricultural areas after the first and second growing seasons to determine the success of restoration. Restoration would be considered successful in agricultural areas if crop yields are similar to adjacent undisturbed portions of the same field. In other areas, restoration would be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed, and proper drainage has been restored. During this period, Transwestern would submit quarterly reports to the FERC and the BLM that document any problems identified by Transwestern or landowners and describe the corrective actions taken to remedy those problems.

Transwestern would also monitor the entire pipeline route to determine the success of restoration of desert vegetation. In native desert habitats, restoration would be monitored qualitatively, including both photographic and written documentation of field observations, and quantitatively by measuring species density and percent cover. Data would be obtained from areas disturbed by construction and adjacent undisturbed areas for comparison purposes. Results of the monitoring would be provided in reports to the FERC, the BLM, and the FS. Additionally, Transwestern would conduct surveys for non-native invasive plant species. Additional discussion of Transwestern's vegetation monitoring program, including the criteria that would be used to determine successful revegetation, details of the monitoring schedule, treatments that would be conducted to control noxious weeds after construction, and the remedial actions that would be implemented if revegetation of the right-of-way is deemed unsuccessful is presented in section 4.4.2.

After construction, the lead, cooperating, and/or other agencies 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, Transwestern would be required to extend its post-construction monitoring programs. The BLM would retain Transwestern's bond or other security until the BLM is satisfied with Transwestern's reclamation efforts.

2.6 OPERATION, MAINTENANCE, AND SAFETY CONTROLS

Transwestern would operate the pipeline facilities in compliance with DOT regulations at Title 49 CFR 192. Transwestern's existing pipeline system is monitored and controlled 24 hours a day for pressure drops in the pipeline that could indicate a leak or other operating problem by full-time staff at the Transwestern Gas Control Center in Houston, Texas. Transwestern's round-the-clock monitoring of the pipeline system is accomplished principally through a Supervisory Control and Data Acquisition (SCADA) system, which is a computer system for gathering and analyzing real-time systems. The SCADA system gathers information from locations along the pipeline, such as compressor stations, meter stations, or valves, transfers the information back to a central site, compares collected data to pre-set safe

operating data points, and organizes and displays the data including alarm displays for actual operating points that do not meet pre-set operating criteria. The Phoenix Expansion Project would also be monitored utilizing the SCADA system.

If system pressures fall outside a predetermined range, an alarm would be activated and transmitted to the Gas Control Center. The valves on the Phoenix Expansion Project pipeline facilities would be equipped with a commercial line break control system that would close valves if pipeline conditions indicate the potential of a line break. Transwestern maintains a list of outside contractors, with appropriate heavy equipment and operators, who could be dispatched to the scene of an emergency. The estimated response time for a leak could be up to 2 hours depending on time of day and location of personnel.

In addition, periodic aerial and ground inspections by pipeline personnel would identify soil erosion that may expose the pipe, dead vegetation that may indicate a leak in the line, conditions of the vegetative cover and erosion control measures, unauthorized encroachment on the right-of-way, such as building and other substantial structures, and 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. Appropriate responses to conditions observed during inspection would be taken as necessary. Monitoring and inspection activities would be scheduled to take place on the following schedule:

- Rectifier inspections – Bimonthly
- Pipeline patrols (aerial) – Monthly
- Cathodic protection surveys – Annually
- Valve, regulator, and relief valve inspections – Annually
- Class location surveys – Annually
- Leak surveys – Annually

Section 4.11 presents a more detailed discussion of Transwestern's operation procedures and safety controls for the proposed project, including the corrosion protection and detection systems, pipe wall classifications, and emergency response procedures. Transwestern's vegetation maintenance procedures are discussed in detail in section 4.4.2.

2.7 FUTURE PLANS AND ABANDONMENT

Transwestern has not identified plans for additional future expansion of its system beyond the expansion discussed in this EIS or plans for abandonment of the project facilities. Properly maintained, the project could operate for 35 or more years. If and when Transwestern abandons any of the proposed facilities, the abandonment would be subject to separate approvals by the FERC and the BLM. The FERC review for abandonment would be conducted under section 7(b) of the NGA. For the federal lands involved, the BLM would require Transwestern to submit an abandonment plan that would be reviewed by the BLM and the other affected federal land management agencies (i.e., the FS and the BOR). The BLM would be responsible for approving the plan after receipt of concurrence from the FS and the BOR.

The FERC typically allows a buried pipeline that has reached the end of its service life to be abandoned in place when it has been internally cleaned, purged free of gas, isolated from interconnections with other pipelines, and sealed without removing the pipe from the trench. The FERC believes that this approach generally minimizes surface disturbance and other potential environmental impact. The aboveground pipeline at compressor and meter stations would be completely removed, including all related aboveground equipment and foundations, and the station sites would be restored to as near original condition as possible. Disposition of the Transwestern facilities on federal lands under the jurisdiction of

the BLM, the FS, and the BOR would depend on decisions made in the abandonment plan discussed above.

Upon abandonment of the pipeline, in part or in whole, the rights-of-way associated with the abandoned facilities would normally be returned to the landowners/land management agencies according to the specific easement agreements between the pipeline company and the landowners/land management agencies.