4.0 ENVIRONMENTAL ANALYSIS

The environmental consequences of constructing and operating the proposed Project would vary in duration and significance. Four levels of impact duration were considered: temporary, short term, long term, and permanent. Temporary impacts generally occur during construction with the resource returning to preconstruction condition almost immediately afterward. Short-term impacts could continue for up to 3 years following construction. An impact was considered long term if the resource would require more than 3 years to recover. Permanent impacts could occur as a result of any activity that modifies a resource to the extent that it would not return to preconstruction conditions during the life of the Project, such as the construction of a compressor station. We considered an impact to be significant if it would result in a substantial adverse change in the physical environment.

In this section, we describe the affected environments, general construction and operational impacts, and proposed mitigations for each resource. Texas Gas, as part of its proposal, agreed to implement certain measures to reduce impacts. We evaluated Texas Gas's proposed mitigation to determine whether additional measures would be necessary to reduce impact. These additional measures appear as bulleted, boldfaced paragraphs in the text. We will recommend that these measures be included as specific conditions to authorizations that the Commission may issue to Texas Gas.

Conclusions in this final EIS are based on our analysis of the environmental impacts and the following assumptions:

- Texas Gas would comply with all applicable laws and regulations;
- the proposed facilities would be constructed as described in section 2.0 of this document; and
- Texas Gas would implement the mitigation measures included in the application and supplemental documents filed with the FERC.

4.1 GEOLOGIC RESOURCES

This section describes geologic resources associated with the proposed Project and potential geologic hazards that may be encountered as a result of implementing the Project.

4.1.1 Geologic Setting

The Project would cross two physiographic provinces: the Arkansas Valley section of the Ouachita physiographic province and the Mississippi Alluvial Plain and the East Gulf Coastal Plain sections of the Coastal Plains physiographic province. The contact between these provinces is delineated by the Fall Line, which is crossed by the proposed Fayetteville Lateral in White County, Arkansas, near MP 63.0. The Fall Line delineates the western extent of the Mississippi River alluvial deposits and the eastern extent of the Ouachita province.

The proposed Fayetteville Lateral west of MP 63.3 (in Conway, Faulkner, and Cleburne Counties and the western portion of White County, Arkansas) would be within the Ouachita physiographic province. Between MP 63.3 and MP 166.2 (in eastern White County and Woodruff, St. Francis, Lee, and Phillips Counties, Arkansas and Coahoma County, Mississippi) the Fayetteville Lateral would be within the Coastal Plains physiographic province. The bedrock beneath the Arkansas Valley section of the Ouachita Province consists of Pennsylvanian-age (323 to 290 million years old) sedimentary deposits comprised primarily of thick shale and sandstone deposits. The Mississippi Alluvial Plain of the Coastal Plains physiographic province contains unconsolidated and semi-consolidated Holocene-age alluvial deposits of the ancestral Mississippi River (Renken, 1998).

The proposed Greenville Lateral portion of the Project is mapped within the Mississippi Alluvial Plain and East Gulf Coastal Plain sections of the Coastal Plains physiographic province. The proposed Greenville Lateral would begin near Greenville, Mississippi, and would traverses generally east-southeast across the Mississippi Alluvial Plain to about MP 62.5 (in Washington, Sunflower, and Humphreys Counties and the western portion of Holmes County, Mississippi). From MP 62.5 to MP 95 (in the eastern portion of Holmes County and Attala County, Mississippi), the proposed Greenville Lateral would cross the East Gulf Coast section. The Mississippi Alluvial Plain is underlain by unconsolidated and semi-consolidated Holocene-age alluvial deposits of the ancestral Mississippi River (Renken, 1998). The sediments underlying the East Gulf Coast section are described as primarily marine sedimentary deposits that dip gently toward the Gulf of Mexico (Renken, 1998).

Elevations along the proposed pipeline route range from 100 to 880 feet above mean sea level. Topography in the Project area ranges from flat to very steep, with slopes ranging from 0 to 40 percent along the pipeline route (USDA/NRCS, 2003; USDA/NRCS, 2005a).

4.1.2 Mineral Resources

Oil and gas well information was obtained from the AOGC and the Mississippi State Oil and Gas Board (MSOGB). About 250 oil and gas wells are within the counties that would be crossed by the proposed Fayetteville Lateral, and about 50 oil and gas wells are within the counties crossed by the proposed Greenville Lateral (AOGC, 2007; MSOGB, 2007). Ten oil and gas wells would be within 0.5 mile of the Project. Several of these gas wells are currently being developed (drilled) or were recently developed and would provide much of the gas supply transported in the Texas Gas pipeline, if approved.

About 55 miles of the westernmost portion of the proposed Fayetteville Lateral would cross Southwestern's Fayetteville Shale gas production area. Five of the six active oil and gas wells currently identified in state databases as being within 0.5 mile of the Fayetteville Lateral route were mapped in Conway County along a 6-mile-long stretch between MPs 0.9 and 6.9. Active well drilling and gathering line installation was observed during our site visits to this area. Thus, additional wells may be within 0.5 mile of the proposed Fayetteville Lateral in the future. Texas Gas has consulted with Southwestern to develop a pipeline route through the gas production area to minimize conflicts with ongoing development of this resource and to plan locations for M&R stations to interconnect with Southwestern's gathering pipelines.

Four oil and gas wells would be within about 0.5 mile of the proposed Greenville Lateral. Two of these wells would be between MP 80.9 and MP 87.6 in Attala County, Mississippi, and the remaining two wells would be between MP 45.5 and MP 46.0 in Humphreys County, Mississippi. All four wells were reported as abandoned (MSOGB, 2007).

The proposed pipeline route would not cross any sources of sand, gravel, or consolidated rock. Sand and gravel are the predominant mineral resources found in the Project area in Arkansas. This resource is developed as crushed stone from mined consolidated rock, or it is mined from unconsolidated sand and gravel deposits. The extraction of these mineral deposits is generally limited to larger cities or strategic sites with access to major transportation routes (Arkansas Geological Commission [AGC], 2001). The closest resource site is about 500 feet north of MP 56.5 along the proposed Fayetteville Lateral. Only one stone quarry, located about 0.8 mile north of MP 23.6 of the Fayetteville Lateral, would be near the Project (USGS, 2005a).

In Mississippi, no mineral recovery or processing sites were reported within 1 mile of the proposed Greenville Lateral (USGS, 2005a). According to the MDEQ, the Greenville Lateral does not cross any other economically significant mineral resources (MDEQ, 2004).

Given that few mineral resources would be in the immediate vicinity of the propose Project, and that known sites would be avoided, we believe that no significant impact on mineral resources would occur due to construction and operation of the Project.

4.1.3 Geologic Hazards

4.1.3.1 Seismic Hazards

Seismic hazards are characterized in terms of magnitude and intensity. Magnitude measures the energy released at the source of the earthquake and is determined by measurements recorded by seismographs. Earthquake magnitude is measured using the Richter Magnitude (RM) scale. RM is a logarithmic measure of ground shaking based on data collected by seismometers. The RM scale is based on ground motion and does not take into account distance from source and structural stability of the subsurface. RM is, therefore, not a representative measure of the intensity of the seismic event at a given location.

Intensity measures the strength of shaking produced by an earthquake at a specific location. Intensity is determined from effects on people, man-made structures, and the natural environment. The intensity of a seismic event is measured using the Modified Mercalli Intensity (MMI) scale. MMI provides a measure of the intensity of ground movement felt in a given area based on damage assessments and eyewitness reports. The MMI scale ranges from an earthquake intensity value of I, in which the earthquake is not felt, to an intensity value of XII, in which damage is total, large rock masses are displaced, and objects are thrown into the air. Table 4.1.3-1 describes a range of earthquake intensities and their potential effects. Figures 4.1.3-1 and 4.1.3-2 identify the locations of seismic source zones and known earthquake epicenters within the surrounding region. Figures 4.1.3-3 and 4.1.3-4 depict the peak ground acceleration with a 10 percent probability of exceedance over a 50-year period, while figure 4.1.3-5 depicts the seismic risk zone for the Project area.

Seismic activity in the region surrounding the proposed pipeline route is closely linked to the New Madrid fault system. The New Madrid seismic zone lies within the central Mississippi Valley, extending from northeast Arkansas through southeast Missouri, western Tennessee, and western Kentucky and into southern Illinois. The center of the New Madrid seismic zone (or area in which the probability of a seismic event is greatest) is located about 90 miles generally northeast of the Project area, along the adjoining boundaries of Missouri, Arkansas, and Tennessee. Historically, that area has been the site of some of the largest earthquakes in North America. Between December 1811 and February 1812, three of the most powerful earthquakes in United States history originated in the New Madrid seismic zone. Of the three major shocks that occurred within the series, historical evidence indicates that none of the shocks originated in Arkansas or Mississippi (USGS, 2005b). Since that time, numerous intensity MMI V or greater earthquakes have been reported in Arkansas and Mississippi. The majority of these events is associated with the New Madrid fault system and did not occur in the vicinity of the proposed Fayetteville or Greenville Laterals.

Five significant seismic events having epicenters within a 35-mile radius of the Project have been recorded since 1568 (USGS, 2005b). The intensities of these seismic events ranged from MMI III to V, or roughly equivalent to 3.8 to 5 RM. The intensities of these events and their locations relative to the nearest Project MP are summarized in table 4.1.3-2. The three most recent seismic events were reported south of the Fayetteville Lateral route between MP 0.0 and MP 23.0 and had intensities of MMI III to IV. The strongest seismic event (MMI V) was reported in 1878, with its epicenter located about 34 miles northeast of MP 83.0 of the Fayetteville Lateral. Figures 4.1.3-3 and 4.1.3-4 present the USGS seismic hazard estimate for the Fayetteville Lateral route and Greenville Lateral route, respectively. The hazard information provided by the USGS confirms that the greatest risk for significant seismic activity is associated with the New Madrid fault centered northeast of the Fayetteville Lateral route (USGS, 1997).

Table 4.1.3-1

Range of Earthquake Intensities

Intensity (MMI)		RM Scale Equivalent
I	Not felt except by a very few under especially favorable conditions.	1.0 – 3.0
II	Felt by only a few persons at rest, especially on the upper floors of buildings.	3.0 – 3.9
III	Felt quite noticeably by persons indoors, especially on the upper floors of buildings. Many people do not recognize it as an earthquake. Standing automobiles may rock slightly. Vibrations are similar to the passing of a truck. Duration is estimated.	3.0 – 3.9
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sounds. Sensation like heavy truck striking building. Automobiles rocked noticeably.	4.0 – 4.9
V	Felt by nearly everyone; many awakened. Some dishes and windows are broken. Unstable objects are overturned. Pendulum clocks may stop.	4.0 – 4.9
VI	Felt by all, many frightened. Some heavy furniture is moved; a few instances of fallen plaster. Damage is slight.	5.0 – 5.9
VII	Damage is negligible in buildings of good design and construction, and slight to moderate in well-built ordinary structures. Considerable damage in poorly built or badly designed structures. Some chimneys are broken.	5.0 – 5.9
VIII	Damage is slight in specially designed structures; considerable damage in ordinary substantial buildings, with partial collapse. Damage is great in poorly built structures. Chimneys, factory stacks, columns, monuments, and walls fall. Heavy furniture is overturned.	6.0 – 6.9
IX	Damage is considerable in specially designed structures; well-designed frame structures are damaged. Damage is great in substantial buildings, with partial collapse. Buildings are shifted off foundations.	6.0 - 6.9
X	Some well-built wooden structures are destroyed; most masonry and frame structures are destroyed along with their foundations. Rails are bent.	7.0 and higher
XI	Few, if any, (masonry) structures remain standing. Bridges are destroyed. Rails are bent greatly.	7.0 and higher
XII	Damage is total. Lines of sight and level are distorted. Objects are thrown into the air.	7.0 and higher

Source: USGS, 2006a.

Table 4.1.3-2

Earthquake Epicenters within 35 Miles of the Fayetteville Lateral and Greenville Lateral Routes

Date	Depth (km)	Magnitude/ Intensity (RM/MMI)	Distance from Route (miles)	Nearest MP	Epicenter Location Relative to Route
Fayetteville Lateral					
May 4, 2001	10	4.5/VI	9.8	23	South
January 21, 1982	3	4.5/VI	11.4	21	South
January 1, 1969	7	4.5/VI	27.2	0	South-southeast
November 19, 1878	No Data	4.9/VI	33.7	76	Northeast
Greenville Lateral					
June 4, 1967	6	4.5/VI	15.1	0	Northeast

Source: USGS, 2005b.

RM – Richter magnitude scale uses the area in which the event was felt coupled with the amplitude of the shaking to determine and assign intensity.

MMI – Modified Mercalli Intensity Scale estimates the relative intensity from I to XII of an event in a given area during an event based on physical damage and eyewitness reports of ground movement.

km = kilometer

4.1.3.2 Active Faults

The Fayetteville Lateral and the Greenville Lateral would not cross any identified Quaternary-age faults (Haller et al., 2005). However, several fault zones are mapped within 100 miles of the Fayetteville Lateral. The fault zones are listed in table 4.1.3-3.

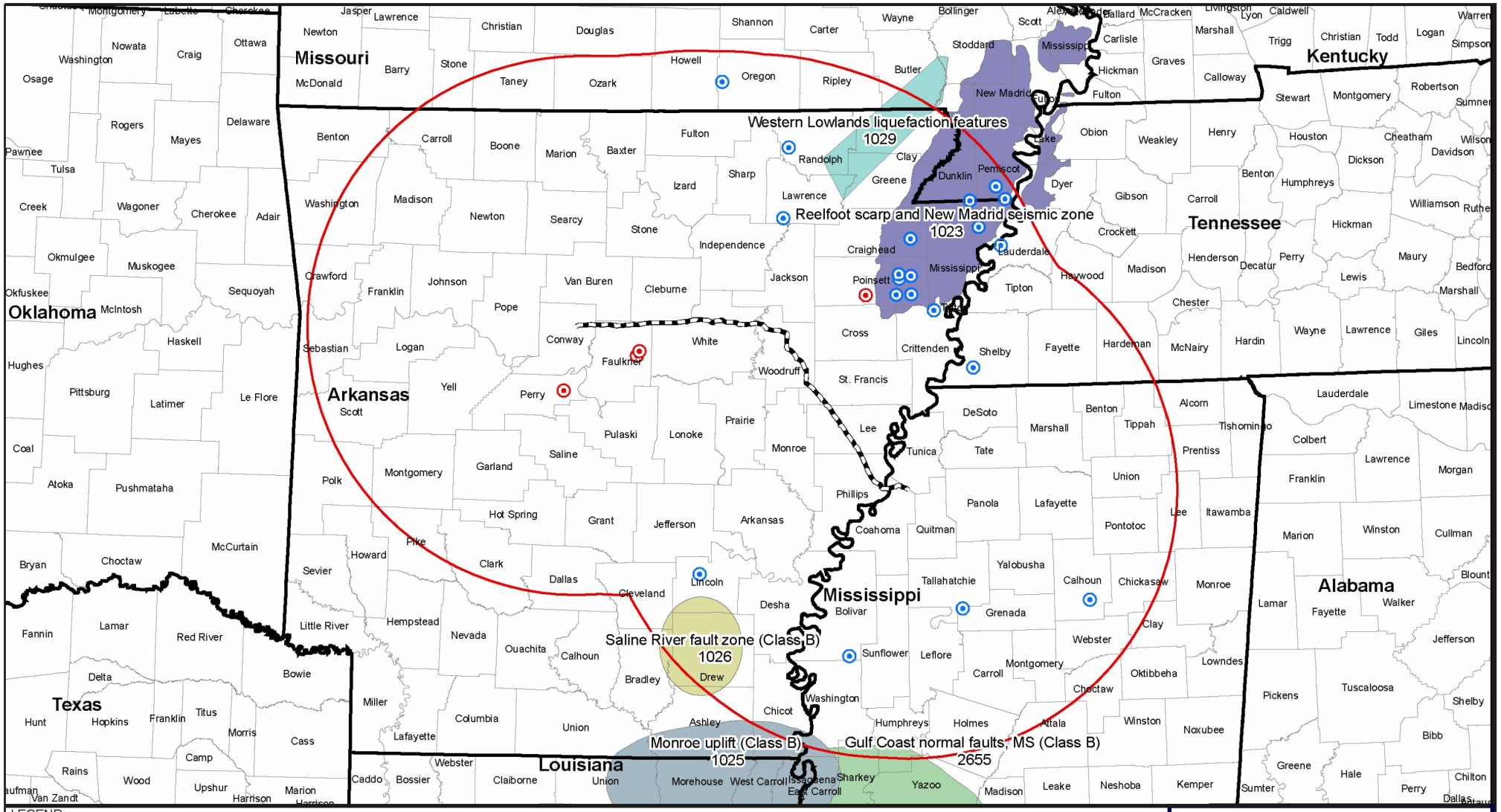
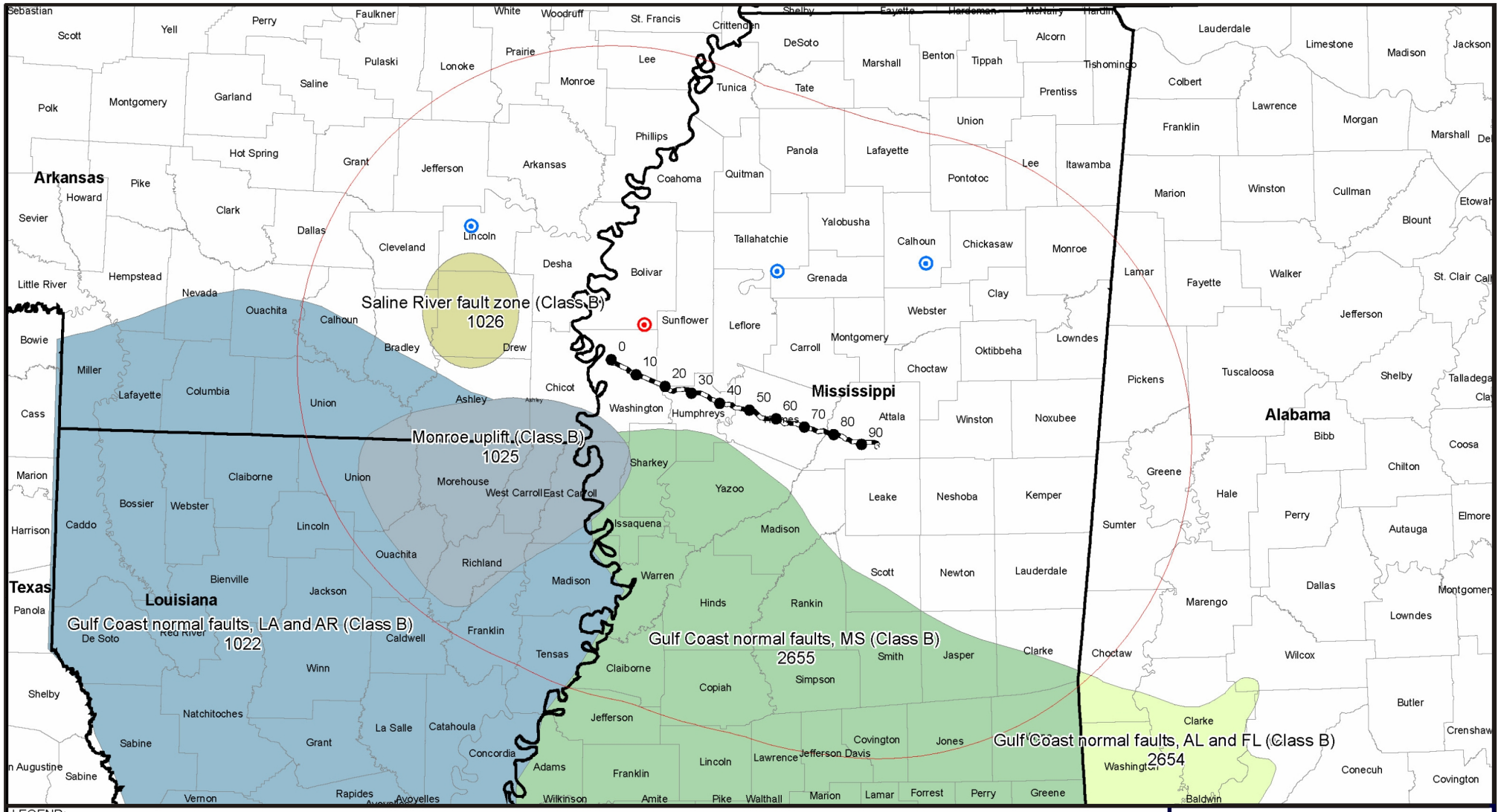


Figure 4.1.3-1
Fayetteville/Greenville Expansion Project
Seismic Source Zones and
Known Earthquake Epicenters
Fayetteville Lateral



LEGEND:

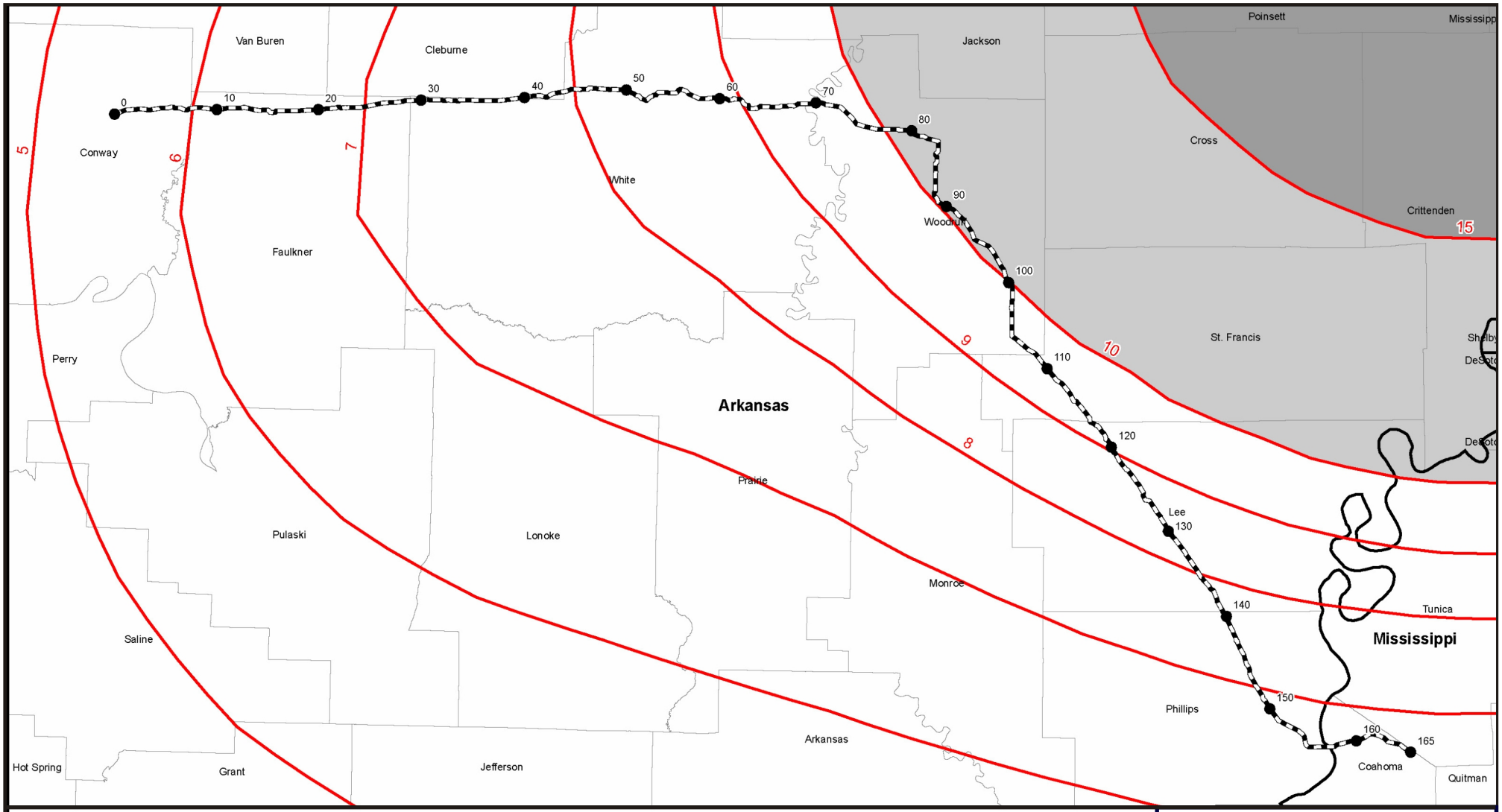
- Gulf Coast normal faults, AL and FL (Class B)
- Gulf Coast normal faults, LA and AR (Class B)
- Gulf Coast normal faults, MS (Class B)
- Monroe uplift (Class B)
- Saline River fault zone (Class B)
- Earthquakes Within 35 Miles
- Earthquakes Within 100 Miles
- Project Centerline
- Milepost
- 100 Mile Buffer

Based on Quaternary Fault and Fold Database of the United States 2004 Publisher: U.S. Geological Survey, and Significant United States Earthquakes, 1568-2004
Publisher: National Atlas of the United States
http://nationalatlas.gov
Scale: 1in=30mi
Coordinate System: NAD 1983 State Plane Mississippi West Feet

0 30 60
Scale in Miles

N

Figure 4.1.3-2
Fayetteville/Greenville Expansion Project
Seismic Source Zones and
Known Earthquake Epicenters
Greenville Lateral



LEGEND:

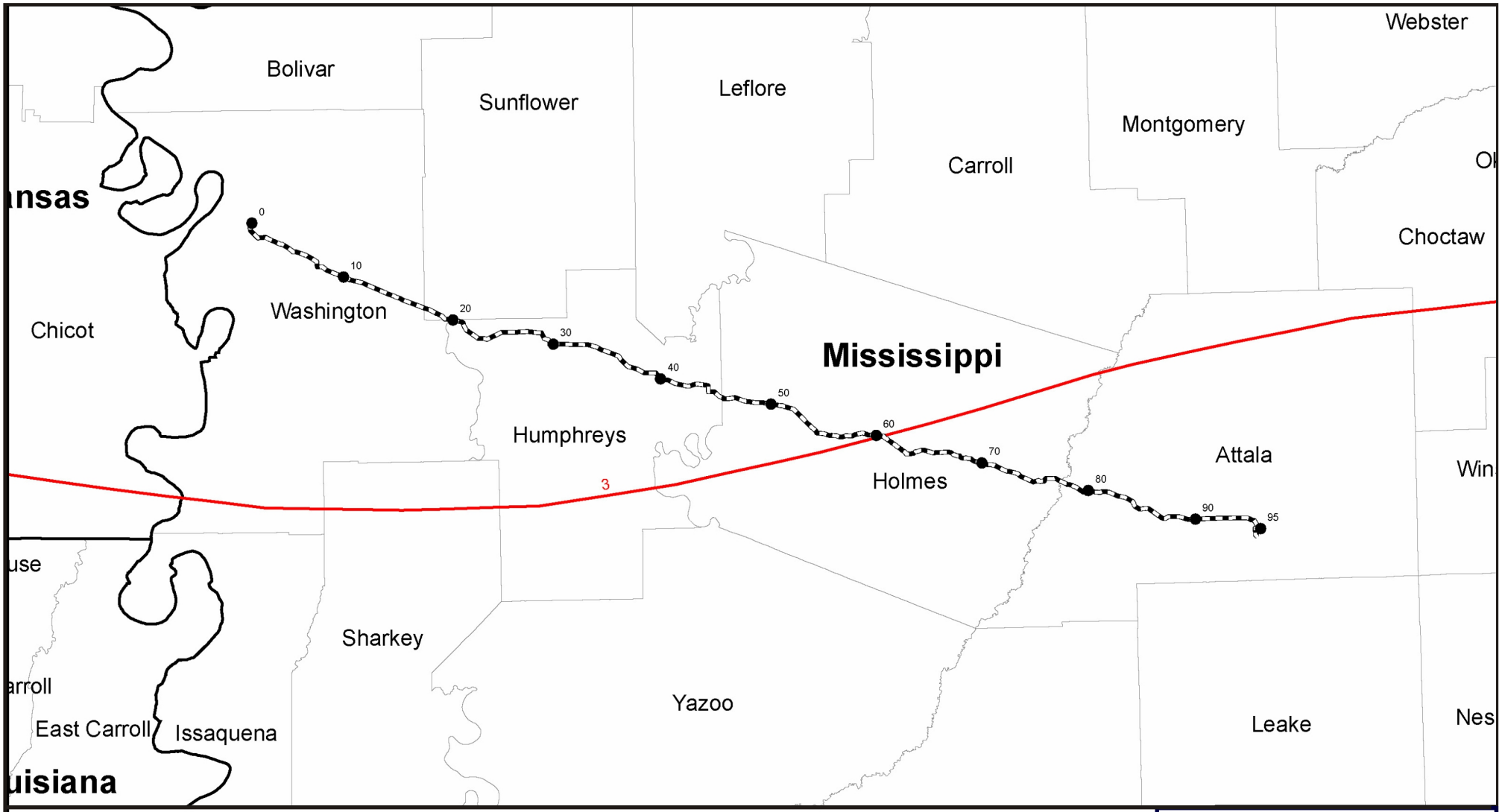
- Project Centerline
- Mileposts
- Probability Contour (% of Gravity)
- 10-15% of Gravity
- 15-20% of Gravity

Based on Seismic Hazard Map for the United States; National Atlas of the United States, Reston, VA.
Scale: 1in=9mi
Coordinate System: NAD 1983 State Plane Arkansas North Feet

0 9 18
Scale in Miles

N

Figure 4.1.3-3
Fayetteville/Greenville Expansion Project
Peak Ground Acceleration with 10% Probability of Exceedance in 50 Years
Fayetteville Lateral



LEGEND:

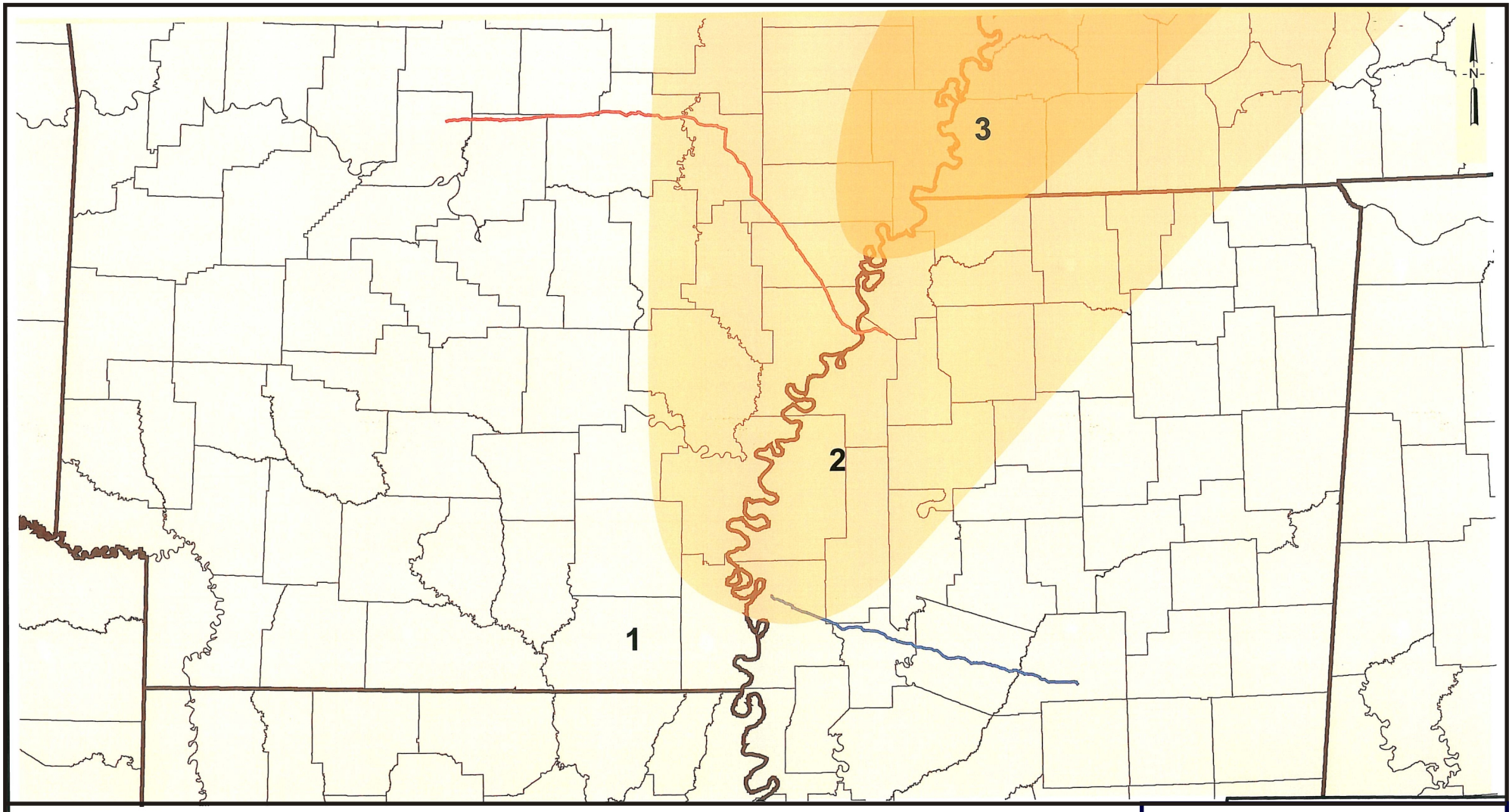
- Mileposts
- Project Centerline
- Probability Contour (% of Gravity)

Based on Seismic Hazard Map for the United States; National Atlas of the United States, Reston, VA.
Scale: 1in=8mi
Coordinate System: NAD 1983 State Plane Mississippi West Feet

0 8 16
Scale in Miles

N

Figure 4.1.3-4
Fayetteville/Greenville Expansion Project
Peak Ground Acceleration with 10% Probability of Exceedance in 50 Years
Greenville Lateral



0 25 50
SCALE IN MILES

SOURCE: Stearns, Richard G. and Miller, Robert A.; Earthquake Hazards in Tennessee, State of Tennessee Department of Conservation, Division of Geology, Nashville, Tennessee,1977, Page 2.

LEGEND:

- Fayetteville Lateral
- Greenville Lateral
- 0 No Earthquake Damage
- 1 Minor Earthquake Damage
- 2 Moderate Earthquake Damage
- 3 Major Earthquake Damage

Figure 4.1.3-5
Fayetteville/Greenville Expansion Project
Seismic Hazard Zones
Greenville and Fayetteville Laterals

Hazards associated with seismicity and faulting include ground-shaking, surface rupture of faults, and offsets along normal, reverse, or strike slip faults. Faulting can be especially hazardous to rigid, linear structures (e.g., pipelines) along which the ground is not moving the same distance or the in the same direction. However, well-maintained pipelines constructed using modern arc welding techniques have performed well in seismically active areas of the United States. Only large, abrupt ground displacements have caused serious impacts on such facilities. Based on the historical record and magnitude of earthquakes near the proposed Project's corridor, we believe the potential for seismicity and faulting does not represent a significant risk to the stability or safety of the proposed Project.

Table 4.1.3-3

Fault Zones within 100 Miles of the Fayetteville Lateral and Greenville Lateral Routes

Fault Zone	Distance and Direction from Proposed Route (miles)	Nearest MP	Age (ybp)	Maximum Movement Rate (mm/year)
Fayetteville Lateral				
Reelfoot Scarp and New Madrid Seizmic Zone No. 1023	34/NE	83	< 15,000	No Data
Western Lowlands Liquefaction Features No. 1029	54/NE	79	<15,000	Insufficient Data
Saline River Fault Zone No. 1026	72/SW	152	<15, 000	<0.2
Monroe Uplift No. 1025	95/SW	155	<15, 000	<0.2
Gulf Coast Normal Faults, MS (Class B) No. 2655	95/S	166.2	<1,600, 000	<0.2
Greenville Lateral				
Gulf Coast Normal Faults, MS No. 2655	10.3	41	<1,600, 000	<0.2
Monroe Uplift No. 1025	17.4	9	<15, 000	<0.2
Saline River Fault Zone No. 1026	31.8	0	<15,000	<0.2
Gulf Coast Normal Faults Class LA and AR No. 1022	39.7	1	<1,600, 000	<0.2

Source: Haller et al., 2005.

ybp = years before present.

mm/year = millimeters per year.

4.1.3.3 Soil Liquefaction

Liquefaction occurs in saturated soils (i.e., soils in which the space between individual particles is completely filled with water). This interstitial water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low. However, earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with respect to each other. When liquefaction occurs, the strength of the soil decreases and, its ability to support foundations for buildings and bridges is reduced. Because liquefaction occurs only in saturated soil, its effects are most commonly observed in low-lying areas near bodies of water such as rivers, lakes, bays, and oceans.

Areas with the potential for soil liquefaction include locations:

- underlain by Holocene deposits that are likely to be non-cohesive, such as alluvial, lacustrine, and shoreline deposits; and

- where the water table occurs at 10 feet or less below the surface, and where the USGS Open File Report 82-1033 (Algermissen et al., 1982) indicates a 10 percent probability that

horizontal ground accelerations of 10 percent of gravity or greater would be exceeded in 50 years (referred to as the "seismic threshold").

In the vicinity of the proposed Fayetteville Lateral route, the floodplains of the Mississippi River and other rivers and major waterbodies that would be crossed are potentially underlain by Holocene deposits (Haley, 1993; Moore, 1969). In addition, the water table below portions of the Project area likely occurs at 10 feet or less below the land surface within the floodplain of the Mississippi River and other rivers within the Mississippi Alluvial Plain east of MP 63.3. The seismic threshold (horizontal ground accelerations of 10 percent or more with 10 percent probability of exceedance in 50 years) is exceeded along the Fayetteville Lateral between MP 77 and MP 99 in Woodruff County, Arkansas (USGS, 1997). Therefore, soil liquefaction is considered a hazard in this area. Areas exceeding the threshold for soil liquefaction are identified in figure 4.1.3-3.

In the vicinity of the proposed Greenville Lateral, the floodplains of the Mississippi River and other rivers and major waterbodies that would be crossed also are potentially underlain by Holocene deposits (Moore, 1969). In addition, the water table below portions of the Project area likely occurs at 10 feet or less below the land surface within the floodplain of the Mississippi River and rivers within the Mississippi Alluvial Plain west of MP 54.5. The seismic threshold, however, is not exceeded in the vicinity of the proposed Greenville Lateral (Rukstales, 2002). Therefore, soil liquefaction does not appear to be a significant hazard in the vicinity of the proposed Greenville Lateral.

Newer pipelines exhibit elastic behavior and are significantly less vulnerable to earthquake effects, including liquefaction, differential settlement, violent shaking, and ground strain, than the older types of pipe installed 50 to 100 years ago. Buoyancy effects are probably of greatest concern in areas such as floodplains and river bottoms, where massive liquefaction could take place during a large earthquake. To minimize the buoyancy effect upon the pipeline due to liquefaction in areas of saturated soils, the pipeline would have concrete coating, concrete weights, or gravel-filled blankets. Today's pipe has greater ability to conform to ground movements resulting from vibration and slippage. Seismic wave propagation generally does not have a serious effect on welded buried pipelines in good condition. Some situations where wave propagation could lead to damage to the pipeline system include transition zones between very stiff and very soft soils, penetration points of pipes into valve boxes, and at branch-connections, pipe fittings, and valves. However, the pipeline and associated facilities would be designed and constructed in accordance with the standards specified in 49 CFR Part 192, *Minimum Federal Safety Standards for the Transportation of Natural Gas and other Gas by Pipeline*, which should adequately address pipeline design where there's potential for soil liquefaction. Given the seismic risk in the area and the methods that would be used to construct the proposed pipeline and associated facilities, we believe that soil liquefaction does not represent a significant risk to the stability or safety of the proposed Project during construction and operation of the Project.

4.1.3.4 Karst Potential/Ground Subsidence

Karst features such as sinkholes, caves, and caverns can form as a result of the long-term action of groundwater on soluble carbonate rocks (e.g., limestone and dolostone). Karst features are formed when rainwater picks up carbon dioxide from the air (forming carbonic acid) and dead plant debris in the soil and then percolates through cracks dissolved in the rock. The bedrock becomes saturated with water at some level, and the rock continues to dissolve as the water moves sideways along bedding planes (horizontal cracks between rock layers) and joints (or fractures) in the rock itself. These conduits enlarge over time and move the water via a combination of gravity and hydraulic pressure, further enlarging the conduits through a combination of solution and abrasion of water on the surrounding rock. Underground mining also poses risks to engineered structures due to the potential of the overlying strata to collapse into the void formed by the extraction of minerals.

Sinkholes are reported to occur at a rate of less than one for every 100 square miles in Conway, Faulkner, Cleburne, and White Counties in Arkansas. These areas represent the highest potential for karst

development along the Fayetteville and Greenville Laterals. All of theses areas are mapped west of the Fall Line within the Pennsylvanian bedrock (Renken, 1998).

Ground subsidence can affect pipelines and aboveground facilities by causing loss of support that would result in bending or rupturing of pipeline and weaken the foundation of aboveground facilities. However, the pipeline and associated facilities would be designed and constructed in accordance with the standards specified in 49 CFR Part 192, *Minimum Federal Safety Standards for the Transportation of Natural Gas and other Gas by Pipeline,* which should ensure the integrity of the Project facilities and minimize the potential for any pipeline failures due to ground subsidence. In addition, Texas Gas would conduct regular patrols of the pipeline right-of-way during operations to identify conditions, including areas of ground subsidence, that might affect safety or the operation of the pipeline. Based on the lack of identified karst features in proximity to the proposed Project corridor, and the specific construction and operational measures that would be adhered to by Texas Gas, we do not believe karst to represent a significant risk to the stability or safety of the proposed Project.

4.1.3.5 Bedrock and Blasting

The pipelines would be installed to allow a minimum cover of 3 feet in areas of shallow bedrock. Therefore, the Project was evaluated for areas where bedrock might be encountered above a depth of 80 inches (conservatively, 3 feet of cover and a 36-inch-diameter pipe).

Figure 4.1.3-6 identifies the approximate areas where shallow bedrock may be encountered along the proposed Fayetteville Lateral; figure 4.1.3-7 presents similar information for the Greenville Lateral. Blasting may be necessary along a limited portion of the Fayetteville Lateral. Location-specific evaluations would be conducted by Texas Gas's construction contractor to identify those locations where alternatives to blasting are not feasible. Texas Gas does not anticipate needing to blast at any location along the Greenville Lateral.

About 25 percent (38.8 miles) of the proposed Fayetteville Lateral would cross areas with reported depths to bedrock of less than 80 inches (based on analysis of the state Soil Survey Geographic [SSURGO] database). The soils with reported depth to bedrock of less than 80 inches would be in Arkansas west of the Fall Line (near MP 63.3) in Conway, Faulkner, Cleburne, and White Counties. The surficial bedrock encountered between MP 0.0 and MP 45.0 is expected to be paralithic (i.e., soft); therefore, blasting should not be required. However, the surficial bedrock crossed by the proposed Fayetteville Lateral between MP 45.0 and the Fall Line at MP 63.3 may require blasting.

All blasting-related operations would comply with federal, state and local regulations and permit conditions and would be conducted by or under the direct supervision of experienced, licensed, and certified personnel. To avoid injury to personnel and damage to structures and other features such as water wells and existing pipelines, Texas Gas stipulates that the blasting contractor must furnish a site-specific blasting plan prior to any proposed blasting-related activity. These plans would identify the distance and orientation to the nearest structure (both aboveground and belowground) and the procedures to be used for storing, handling, transporting, loading, and firing explosives. These site-specific plans would be reviewed by Texas Gas and approved by company representative(s) prior to each blast. Further, if blasting is needed for construction across a waterbody, Texas Gas would a provide us with a schedule identifying when trenching or blasting would occur within each waterbody greater than 10 feet wide, or within any designated coldwater fishery, in a manner consistent with our Procedures.

Blasting for grade or trench excavation would be considered only after all other reasonable means of excavation have been evaluated and determined to be unlikely to achieve the required results. Texas Gas may specify locations (foreign line crossings, nearby structures, etc.) where consolidated rock would be removed by approved mechanical equipment (e.g., rock trenching machines, rock saws, hydraulic rams, and jack hammers) in lieu of blasting.