3.0 ENVIRONMENTAL ANALYSIS

The environmental consequences of constructing and operating the proposed Midcontinent Express Pipeline 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 resources returning to preconstruction conditions almost immediately afterward. Short-term impacts would continue for approximately 3 years following construction. Impacts were considered long-term if the resources would require more than 3 years to recover. Permanent impacts would occur as a result of activities that modify resources to the extent that they would not return to preconstruction conditions during the life of the proposed Project, such as with 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 discuss the affected environment, general construction and operational impacts, and proposed mitigation for each resource. MEP, as part of its proposal, agreed to implement certain measures to reduce impacts, and we evaluated the proposed mitigation measures to determine whether or not additional measures would be necessary to further reduce impact. Additional mitigation measures that we have identified appear as bulleted, boldface paragraphs in the text of the EIS. We will recommend that these measures be included as specific conditions to the Certificate that may be issued to MEP for the proposed Project.

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

- MEP would comply with all applicable laws and regulations;
- the proposed facilities would be constructed as described in Section 2.0 of this EIS; and
- MEP would implement the mitigation measures identified in its application and supplemental filings to the FERC.

3.1 GEOLOGY

3.1.1 Geological Setting

The geological setting of the proposed Project route encompasses three major physiographic provinces: the West Gulf Coastal Plain (Oklahoma, Texas, and western Louisiana), the Mississippi Alluvial Plain (eastern Louisiana), and the East Gulf Coastal Plain (Mississippi and Alabama). The land surface along the proposed Project primarily consists of soils and unconsolidated Quaternary sediments, and very little bedrock is exposed at the surface.

The Gulf Coastal Plain generally consists of Late Cretaceous to Holocene sedimentary deposits overlying older Paleozoic and Mesozoic rock located to the north and west (Table 3.1.1-1). The sedimentary rocks of the Gulf Coastal Plain, which were deposited mostly in a marine environment, now tilt seaward as a result of a series of later uplifts. Portions of this geologic feature, which extends from Texas to New Jersey, form the broad, submerged Atlantic Continental Shelf.

The Gulf Coastal Plain is bisected by the Mississippi Alluvial Plain. The dominant geological feature of the Mississippi Alluvial Plain is the Mississippi River Embayment, which began in the Precambrian as a rift zone that left a depression in the earth's crust. The depression acted to accumulate sediment eroding from the interior of the continent. The weight of accumulated sediments further

TABLE 3.1.1-1
Geologic Units Underlying the Proposed Midcontinent Express Pipeline Project

Cumulative Length Crossed (miles)	Group / Formation / Type	Description	Age
0.5	Alluvial Coastal and Low Terraces	Lenticular and interfingered deposits of gravel, sand, silt, and clay. Thickness along major streams ranges up to 100 feet averaging 40 feet; along minor streams the thickness ranges up to 45 feet.	Quaternary
63.4	Alluvium	Lenticular and interfingered deposits of gravel, sand, silt, and clay. Thickness along major streams ranges up to 100 feet averaging 40 feet; along minor streams the thickness ranges up to 45 feet. Loams, sand, gravel, and clay; mapped only in the Mississippi River Alluvial Plain	Quaternary
2.4	Blossom Sand	This layer consists of very fine grained to fine grained sand with thin clay interbedding and may also contain silty, calcareous, interbeds of silt. The formation's thickness is generally around 20 feet.	Late Cretaceous
5.4	Bonham Formation	Silty, glauconitic, poorly to thinly bedded marl and clay. This formation may contain marine megafossils. The thickness of the Bonham Formation is typically around 400 feet.	Late Cretaceous
21	Braided Stream Terraces	Light gray, tan, and brown fine to coarse sand, some clay, silt, and gravel.	Pleistocene
3.4	Brownstone Marl	Poor to massive bedded, calcareous, silty, clay. This formation averages a thickness of 80 feet.	Late Cretaceous
85.5	Catahoula Formation	Irregularly bedded gray sand and sandstone; mottled red and gray, green and chocolate-colored clay; some quartzite and some gravel; the Paynes Hammock sand; sandy limestone, cross-bedded fine green sand, and thin-bedded sand and clay, is mapped with the underlying Chickasawhay limestone in eastern Mississippi.	Miocene
16	Chickasawhay Limestone	Limestone, Sandy Limestone and Sand	Oligocene
13	Citronelle Formation	Fine- to coarse-grained sand that is locally gravelly, and is the most important water-yielding formation in the upper part of a sand and gravel aquifer	Pleistocene
44	Cockfield Formation	Loosely consolidated bedrock formation consisting of fine to medium-grained sand and brown lignitic clays, silts, and sands; some sideritic glauconite may weather to brown ironstone in lower part.	Eocene
31.1	Cook Mountain Formation	Greenish gray sideritic, glauconitic clay in upper part may weather to brown ironstone; yellow to brown clays and fossiliferous marl in lower part may weather to black soil. Ironstone concretions near base.	Eocene
8.8	Deweyville Terrace	Clay and silty clay with some local sand and gravel.	Pleistocene

TABLE 3.1.1-1 (continued)
Geologic Units Underlying the Proposed Midcontinent Express Pipeline Project

Cumulative Length Crossed (miles)	Group / Formation / Type	Description	Age
2.6	Dexter Member of Woodbine Formation	Moderately to weakly indurated sandstone, shale, and lignite with an average thickness of approximately 100 feet.	Late Cretaceous
3.1	Eagle Ford Formation	Shale, siltstone, and limestone. The upper part of the formation consists of limestone and shale, while the lower part of the formation consists of siltstone and fine-grained sandstone.	Late Cretaceous
9	Forest Hill Formation	Cross-bedded Fine Grained Sand, Laminated Fine Sand and Clay, Little Lignite	Oligocene
2.9	Gober Chalk and Roxton Limestone	Chalk with local Roxton Limestone beds. Gober Chalk is characterized as being argillaceous, brittle, and bluish gray with an average thickness of 400 feet. The Roxton Limestone is characterized as a sandy, glauconitic, soft limestone that may contain marine megafossils. The thickness of local Roxton Limestone beds is averages 10 feet.	Late Cretaceous
3.9	Gosport Sand and Lisbon Formation	Glauconitic sands with lenses of clay and calcareous, glauconitic, fossiliferous clay, silt, and sand.	Eocene
0.1	Hatchetigbee Formation	Greenish-gray clay or mud, very glauconitic, very fine to fine quartzose sand that is abundantly fossiliferous.	Eocene
10.8	Intermediate Terraces	Light gray to orange-brown clay, sandy clay, and silt; much sand and gravel locally. Surfaces show more dissection and are topographically higher than the Prairie. Composed of terraces formerly designated as Montgomery, Irene, and most of the Bentley.	Pleistocene
14.5	Jackson Group	Green and Gray Calcareous Clay, containing some Sand and Marl	Eocene
1.8	Marlbrook Marl	Calcareous clay with variable amounts of silt and glauconitic limestone. This formation may contain marine megafossils. This formation thickness averages 300 feet.	Late Cretaceous
8.8	Midway Group	Silty, sandy, and glauconitic clay which grades up to mudstone and sand of the Wilcox Group. This formation averages a thickness of 500 feet.	Paleocene
37.3	Natural Levees	Gray and brown silt, silty clay, some very fine sand, reddish brown along the Red River. Shown only on past and present courses of major streams.	Holocene
0.6	Not Applicable	Water	Not Applicable
5.8	Ozan Formation	Calcareous silt and sand with interbedded layers of montmorillonitic, blocky, conchoidal clay.	Late Cretaceous

TABLE 3.1.1-1 (continued)
Geologic Units Underlying the Proposed Midcontinent Express Pipeline Project

Cumulative Length Crossed (miles)	Group / Formation / Type	Description	Age
1.7	Pecan Gap Chalk	Limestone with alternating intervals of soft and hard limesand.	Late Cretaceous
5.8	Prairie Terraces	Light gray to light brown clay, sandy clay, silt, sand, and some gravel. Surfaces generally show little dissection and are topographically higher than the Deweyville. Three levels are recognized: two along alluvial valleys, the lower coalescing with its broad coastwise expression; the third, still lower found intermittently gulfward.	Pleistocene
24.6	Queen City Sand	Fine grained locally carbonaceous sand and lignitic clay.	Eocene
4	Reklaw Formation	Crossbedded fine to medium grained sandstone and silty, lignitic clay with some hematite and muscovite. This formation's thickness ranges from approximately 50 to 80 feet.	Eocene
7	Sparta Formation	Massive sands interbedded with clay and some thin beds of lignite, lignitic sands, and shale.	Pleistocene
1.3	Tallahala Formation	Claystone clayey sand, sandy clay, and thin beds of limestone lithologic similarity to Hatchetigbee both units are invariably deeply weathered and oxidized and consist almost entirely of reddish-orange to reddish-brown, ferruginous-stained, fine to coarse quartzose sand. Beds of typical siliceous claystone are only rarely present in surface outcrops	Eocene
17	Terrace Deposits	Sand, silt, clay, and gravel in various proportions, with gravel more predominant in older, higher terrace deposits. Locally indurated with calcium carbonate (caliche) in terraces along streams.	Quaternary
0.2	Unknown Formation	Sand	Eocene
2.7	Weches Formation	Greensand, sand, and clay with an average thickness of 30 feet.	Eocene
22.6	Wilcox group	Gray to brown lignitic sands and silty to sandy lignitic clays, many seams of lignite, some limestone and glauconite. Includes small Carrizo Sand (Claiborne Group) outcrops.	Paleocene to Eocene
2.4	Wolfe City Formation	The upper portion of this formation consists of very fine grained sand and silt with local sandy calcareous concretions in discontinuous beds. The upper portion of this formation may contain marine megafossils. The lower portion of the Wolfe City Formation consists of calcareous mudstone. The formation's average thickness is 75 feet.	Late Cretaceous
8.5	Woodbine Formation	Various inter-lensing sequence of non-marine, brackish-water, and marine beds of sand, clay, sandstone, and shale 350-600 ft thick. Woodbine fossils include ammonites, gastropods, pelecypods, brachiopods.	Late Cretaceous

depressed the crust, creating more accommodation space. As sea levels fluctuated, the ocean advanced into and retreated out of the Embayment, leaving alternating deposits of marine sediments and limestone, evaporites, delta sediments, and alluvial sediments. As more sediment was deposited, buried sediment lithified into rock and tilted to the south. During the Pleistocene period, outwash from melting glaciers deposited a huge volume of sediment in the Mississippi Embayment. More recently, in the Holocene period, rivers have begun incising into the Pleistocene sediments, creating the modern topography.

3.1.1.1 Topography

Topography along the proposed Project route varies from mostly level floodplains, to gently sloping stream terraces with rolling hills, and some gently sloping to moderately steep uplands along the eastern portion of the proposed route. Elevation along the proposed pipeline route ranges from 60 feet above mean sea level (AMSL) in eastern Louisiana along the Mississippi River floodplain to more than 600 feet AMSL in northeastern Texas. The West Gulf Coastal Plain has elevations ranging from 60 to 600 feet AMSL, with a peak elevation occurring in Oklahoma at MP OK 0.0 and in Texas at MP TX 16.0. Elevations across the East Gulf Coastal Plain range from 105 to 550 feet AMSL from Mississippi to Alabama, MP MS 12.0 to MP AL 5.8, with a peak elevation near MP MS 82.0. Elevations along the portion of the proposed Project route that would traverse the Mississippi River Alluvial Plain range from 70 to 300 feet AMSL, with a peak elevation at MP MS 7.0.

Some areas of moderately rugged topography would be encountered along the proposed Project route, particularly in Ouachita Parish, Louisiana and Warren, Hinds, and Simpson Counties, Mississippi. As described in Section 2.3.2, MEP has indicated that additional workspace would be required to create level and safe workspaces where the proposed Project route would traverse areas of steep side slopes and rolling terrain. Following construction, all such areas would be finish-graded and restored as closely as possible to preconstruction contours. Approximately 19.0 miles of the steeper topography encountered along the proposed pipeline route through Mississippi is associated with thick deposits of loess soils. These loess soil deposits are capable of supporting near vertical slopes when dry, and topography in these areas may vary by 100 feet or more over relatively short distances. Loess soils are discussed in more detail in Section 3.2.

3.1.1.2 Bedrock

The NRCS defines shallow bedrock as bedrock occurring in the upper 60-inches of the soil profile. The presence of shallow bedrock indicates areas where blasting could be required during construction of the proposed Project. A review of soil survey databases for the Project area indicates that areas of shallow bedrock may occur along approximately 15.1 miles of the proposed pipeline route through Oklahoma (MP OK 0.2 to MP OK 3.0) and Louisiana (MP LA 50.1 to MP LA 62.4). However, MEP indicates that any areas of bedrock that might be encountered along the proposed Project route should be easily workable with standard construction equipment and techniques, and the need for blasting associated with trench excavation is not anticipated. Should blasting become necessary, MEP would notify the FERC before blasting. If required, all blasting and disposal of bedrock material would be conducted in accordance with MEP's Plan and Procedures and in compliance with applicable federal, state, and local laws, permits, and authorizations. MEP would use the minimum charge explosives necessary to excavate the trench and place mats over the blast area to keep rock from becoming airborne. Any blasting would be conducted during daylight hours and would not begin until occupants of any nearby buildings, stores, residences, places of business, or farms had been notified. Additionally, MEP would implement all appropriate safety precautions to prevent injury to workers, livestock and property, including notification safeguards such as flags, barricades, and warning signals.

3.1.1.3 Impacts to the Geologic Setting

The primary effect of pipeline construction on geologic resources would consist of disturbances to topographic features found along the construction right-of-way. As described in Section 2.3.1, all areas disturbed during pipeline construction would be finish-graded and restored as closely as possible to pre-construction contours during cleanup and restoration. Additionally, blasting is not anticipated as the proposed Project would be unlikely to encounter significant bedrock exposures. Similarly, geologic conditions present at the proposed compressor station and aboveground facility sites would not require blasting, special equipment, or special construction techniques. For these reasons, construction and operation of the proposed Project would be unlikely to result in significant alterations of the topography or geologic resources of the proposed Project area.

3.1.2 Mineral Resources

A variety of mineral resources are actively extracted in Texas, Oklahoma, Louisiana, Mississippi, and Alabama, including both fuel (oil, natural gas, coal, and uranium) and nonfuel resources (cement, crushed stone, clay, construction sand and gravel, lime, and salt; USGS 2007a). MEP used U.S. Geological Survey (USGS) topographic maps and USGS Minerals Information Team (MIT) data (USGS 2007d) to identify mining sites within a 0.25-mile radius of the proposed pipeline route and aboveground facility locations.

Oil and natural gas production is an important economic resource along portions of the Project route that would traverse Texas, Louisiana, and Mississippi. In total, MEP identified 905 active and inactive natural gas and oil wells within 0.25 mile of the proposed Project mainline route, including 173 wells in Texas, 646 wells in Louisiana, and 564 wells in Mississippi. Additionally, 12 oil and gas wells were identified within 0.25 mile of the proposed Project aboveground facilities**,** and 22 active and abandoned wells were identified within 0.25 mile of the proposed CenterPoint Lateral route through Madison and Richland Parishes, Louisiana. Of these, 25 wells are located within 10 feet of the proposed Project mainline route. Though production of hydrocarbons is also prevalent in Oklahoma's Anadarko, Arkoma, and Ardmore geologic basins, the proposed Project route in Oklahoma would not cross these basins and no oil or natural gas wells were identified in proximity to the proposed Project facilities there. Similarly, the proposed Project route through Alabama would not traverse any area known to be abundant in fuel resources (Alabama State Oil and Gas Board 2007).

The proposed Project would be located in proximity to a number of oil and natural gas wells, but construction and operation of the proposed Project is not expected to have an adverse impact on any exploitable oil and natural gas resources. However, the proposed Project will cross distribution lines associated with actively producing wells. MEP would work with well owners to avoid, reroute around, and/or accommodate active well sites, as well as feeder pipelines that connect to those wells, in proximity to proposed construction work areas, and therefore impacts to any wells at or near the ground surface are unlikely. Impacts to these distribution lines would be minimized by the implementation of standard construction methods and/or best management practices for crossings of foreign utility lines including: installation of shoring or bracing to support smaller-diameter lines, exposure of underground lines, and the installation of equipment bridges at crossings of foreign lines. Excavation of the pipeline trench would typically only extend to a depth of approximately 6.5 feet below the ground surface, and none of the proposed HDDs would exceed a depth greater than 150 feet below the ground surface. Current oil and natural gas extraction operations are conducted at thousands of feet below the ground surface and would therefore not be affected by Project-related construction. Furthermore, since new drilling operations would be conducted adjacent to, but outside of, the permanent pipeline right-of-way, the proposed Project would not impact future oil or gas field development.

The Exxon Mobile Corporation's Talco Oil Field is a large, actively producing oil field located in the vicinity of the proposed Project between MP TX 48.0 and MP TX 58.0. Based on the proximity to the proposed Project and the expansive nature of the oil field, MEP is in the process of negotiating pipeline installation procedures and associated easement conditions with Exxon Mobile Corporation.

Lignite is a low-grade form of coal formed by heating and compression of organic deposits. Lignite has limited economic value because it contains a low percentage of solid carbon and thus has a low energy value per unit mass. Lignite occurs throughout most of northwestern Louisiana, but significant surface mining is limited to seven parishes, including two, Caddo and Bossier, that would be traversed by the proposed pipeline route. Despite the presence of active lignite mining in these two Parishes, none of the identified mineral resource mines within a 0.25 mile radius of the proposed Project in Louisiana are lignite mines**.**

Three classes of coal, including bituminous, sub-bituminous, and lignite, are mined in Texas. Although, the proposed pipeline route would cross several historic coal mining areas or regions in Texas, no active or abandoned coal mines are located within 0.25 mile of the proposed Project route. Texas is also recognized as a leading producer of uranium for the country, but most production takes place in the southern and coastal plain regions of the state and no active or abandoned uranium mines were identified within 0.25 mile of the proposed Project.

No nonfuel mineral resource mines were identified within 0.25 mile of the proposed Project in the states of Oklahoma, Texas, or Alabama. However, the proposed pipeline route would traverse an active gravel pit (MP MS 82.7) and one actively leased area for gravel mining operations within 0.25 mile of the proposed Project in Mississippi (MP MS 81.6 to 81.8). MEP has secured an easement for the actively leased area and is currently attempting to negotiate an easement with the owners of the active gravel mining operation.

Construction sand and gravel are Mississippi's leading nonfuel mineral resources, and most of the counties traversed by the proposed Project contain production areas for these mineral resources (USGS 2005a). As described previously, MEP identified one active gravel pit mine and one active mining lease in proximity to the proposed Project route in Smith County, Mississippi. Although the proposed Project route would traverse both of the aforementioned mineral resource areas, the pipeline route through this area would be collocated with an existing natural gas pipeline. Even though the pipeline route would be collocated with an existing facility, it is possible that the proposed Project could conflict with current and future extraction of mineral resources by that gravel mining operation As part of the right-of-way procurement process, MEP would negotiate with the affected landowners/operators to obtain an easement agreement that eliminates mining activities in the immediate vicinity of the permanent pipeline right-of-way and/or establishes an adequate buffer zone between active mining areas and the proposed pipeline. MEP would file with the FERC any site-specific construction measures that would be implemented to minimize impacts to active surface mining operations within 0.25 mile. Compensation for any losses or limitations on future expansion of mining operations would be addressed during the easement negotiations.

3.1.3 Paleontological Resources

Paleontological resources are the fossilized remains of prehistoric plants and animals, as well as the impressions left in rock or other materials of the forms and activities of such organisms. Sediments deposited in post-Pleistocene time (less than 10,000 years ago) are generally unlikely to contain fossils of paleontological interest and are considered as non-sensitive areas. Older sediments and rock units vary considerably in fossil content with the probability of fossil presence and discovery defined by the

geographic distribution and exposure of specific sedimentary units that have been uplifted, distorted, altered, and exposed during the course of geological history.

The proposed Project route does not cross any areas that have been identified to contain known sensitive paleontological resources. Some recent (Quaternary) geologic formations traversed by the proposed Project are known to contain some marine fossils, but the soil cover over these formations would generally preclude impacts associated with construction of the proposed Project pipeline, which would typically be installed to depths of 5 to 7 feet. The proposed Project route through southeastern Oklahoma would traverse an area of well exposed sedimentary rocks known to contain marine and small mammal fossils. However, no active fossil quarry locations or surface fossil localities were identified within the immediate vicinity of the proposed Project area (Paleontology Portal 2007).

Due to the limited exposure of fossil-bearing rock units crossed by the proposed Project, it is unlikely that trenching and excavation activities associated with construction of the proposed Project would adversely impact paleontological resources. However, in the event that paleontological resources are discovered during the course of pipeline construction, MEP would follow the measures identified in its Unanticipated Discoveries Plan for Paleontological Resources (Program for Recognizing and Reporting Paleontological Resources), which is included as a component of the EMCP. The Unanticipated Discoveries Plan outlines the procedures for documenting unanticipated discoveries of paleontological resources, including photographing and describing the disposition of specimens, recording detailed location data, and reporting such findings to applicable state natural history museums and/or geological survey departments.

Based on the low probability of encountering paleontological resources and adherence to MEP's Unanticipated Discoveries Plan, we conclude that construction and operation of the proposed Project would not result in significant impacts to paleontological resources.

3.1.4 Geologic Hazards

Geologic hazards are defined by the American Geological Institute as "geologic conditions or phenomena that present a risk or are a potential danger to life and property, either naturally occurring or man-made" (American Geological Institute 2007). Geologic hazards potentially occurring in the vicinity of the proposed Project area include seismicity and faults, soil liquefaction, slope failures/landslides, and ground subsidence. Geologic hazards such as volcanism are not relevant to the proposed Project area and are excluded from further consideration.

3.1.4.1 Seismicity and Faults

The USGS defines seismicity as "the geographic and historical distribution of earthquakes" (USGS 2007b). Faults are fractures in rock that provide evidence of past geologic movement. Earthquakes are caused by stress building up along a fault until a critical limit is reached and the stress is released through sudden movement along the fault, causing energy to radiate from the fault in traveling ground waves. Hazards associated with seismicity and faulting include ground shaking, surface rupture of faults, and offset along normal, reverse, or strike-slip faults. Since the ground could move in differing distances or directions at the fault, faulting can be hazardous to linear, rigid structures such as pipelines. However, modern, welded pipelines are generally resistant to damage induced by traveling ground waves.

Though earthquakes have historically occurred in Oklahoma, Texas, Louisiana, Mississippi, and Alabama, they have generally been infrequent and of low magnitude (USGS 2007b). The seismic hazard map of the United States indicates that the proposed Project would be located in a region of low seismic risk (USGS 2002a, USGS 2007c), and MEP reports that there are no known fault zones within a 40-mile

radius of the proposed Project route. The closest known fault, the Meer Fault, is located more than 140.5 miles northwest of the Project origin (OK MP 0.0) in Oklahoma. Consequently, the potential for seismicity and faulting does not represent a significant risk to the stability or safety of the proposed Project.

3.1.4.2 Soil Liquefaction

Soil liquefaction is a condition that occurs when loose, cohesionless, saturated soil (usually well-sorted sand) is subjected to vibration or shock waves. During liquefaction, pore water inhibits grain-to-grain contact, and the strength of the soil is greatly reduced such that the soil may act like a viscous liquid with the ability to move and flow. Soil liquefaction can lead to landslides and earthflows, movement or failure of foundations and footings, and mobility of buried objects.

Some soils along the proposed pipeline route are poorly to very poorly drained, as discussed in Section 3.2, and saturated soil conditions increase the risk of liquefaction. However, because soil liquefaction risk is closely related to seismic risk, which is low within the Project area, the potential for soil liquefaction is similarly low. Additionally, the linear extent and ductile nature of pipelines generally make them less susceptible than other structures to the effects of soil liquefaction. Further, the pipeline and associated facilities would be designed and constructed in accordance with the DOT's regulations in 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards,* and other applicable federal and state regulations, which should adequately address the low potential for soil liquefaction.

Given the low seismic risk in the Project area and adherence to applicable building codes and construction standards, soil liquefaction would not represent a significant risk to the stability or safety of the proposed Project.

3.1.4.3 Slope Failures/Landslides

Several factors contribute to slope failures and subsequent landslides including the degree of slope or tilt of geologic materials, the composition of the materials, the amount of man-made disturbance of the materials, proximity to seismic activity, and the amount of rainfall exposure. Generally, flat areas were selected for the location of the proposed aboveground facility sites; therefore, slope failure is not expected at any of those facility locations. However, slope failures and landslides represent a potential hazard along portions of the proposed Project route that would traverse areas of side slopes and rolling terrain, or areas identified as potentially prone to landslide events. Factors that would increase the potential for slope failures along steep slopes and rolling terrain include cutting along slopes, the weight of construction equipment, and unusually high precipitation.

In general, the areas traversed by the proposed Project route have a low susceptibility to landslide occurrence. However, some localized areas along the proposed pipeline route do have moderate to high landslide susceptibility, as depicted in Table 3.1.4-1. Clay rich deposits that are susceptible to slumping and landslide hazards have been identified along the West Gulf Coastal Plain that traverses Texas, and cretaceous clay deposits that also exhibit slumping have been identified in the East Gulf Coastal Plain through southern Alabama and eastern Mississippi. Similarly, the lower Mississippi Alluvial Plain is also known to be susceptible to landslide hazards. We received a public comment indicating that the area in the vicinity of the proposed Mississippi River crossing has a high Landslide Hazard Rank, as determined by a Federal Emergency Management Agency (FEMA) study conducted to assess the risks posed by natural hazards to pipelines (FEMA 1996).

TABLE 3.1.4-1
Landslide-Susceptible Areas Traversed by the Proposed Midcontinent Express Pipeline Project

State	Milepost (MP) Begin	Milepost (MP) End	Susceptibility/Incident
Oklahoma	OK 0.0	OK 8.4	Low Incidence
Texas	TX 0.0	TX 0.5	Low Incidence
	TX 0.5	TX 7.0	High Susceptibility/Moderate Incidence
	TX 7.0	TX 20.5	Low Incidence
	TX 20.5	TX 49.8	High Susceptibility/Moderate Incidence
	TX 49.8	TX 126.8	Low Incidence
Louisiana	LA 0.0	LA 173.1	Low Incidence
	LA 173.1	LA 187.2	High Susceptibility/ Moderate Incidence
	LA 187.2	LA 193.1	High Incidence
	LA 193.1	LA 194.2	High Susceptibility/ Moderate incidence
Mississippi	MS 0.0	MS 2.6	High Susceptibility/Moderate Incidence
	MS 2.6	MS 5.2	Low Incidence
	MS 5.2	MS 17.5	High Susceptibility/ Moderate incidence
	MS 17.5	MS 60.0	Moderate Susceptibility/Low Incidence
	MS 60.0	MS 109.6	Moderate Susceptibility/Low Incidence
	MS 109.6	MS 116.7	High Susceptibility/ Moderate incidence
	MS 116.7	MS 129.4	Low Susceptibility/ Low Incidence
	MS 129.4	MS 135.4	High Susceptibility/ Moderate incidence
	MS 135.4	MS 154.3	Low Susceptibility/ Low Incidence

Note:
Source: USGS 2005c

The pipeline and associated facilities would be designed and constructed in accordance with the DOT's regulations in 49 CFR Part 192, which would adequately address the potential for slope failures and landslides. Construction of the pipeline and restoration of disturbed areas would be accomplished in accordance with MEP's Plan, which includes measures to control runoff and erosion that would minimize the potential for slope failures. Standard pipeline construction techniques such as padding and use of rock-free backfill material (see Section 2.3) would also effectively insulate the pipeline from minor earth movements. In addition, pre- and post-construction inspections, as well as the engineering design process, would identify areas of potential risk, and continued monitoring along slopes during construction would likely identify any significant landslide hazards before they develop. As described in Section 2.3,

MEP would also implement specialized, two-tone construction techniques to provide for safe working conditions in areas of side slopes potentially susceptible to slope failures. Given adherence to MEP's identified construction and monitoring measures, we believe that the potential for impacts associated with slope failures and landslides would be effectively minimized.

3.1.4.4 Ground Subsidence

Ground subsidence is a lowering of the land-surface elevation that results from changes that take place underground. Common causes of land subsidence include dissolution of limestone in areas of karst terrain; collapse of underground mines; and pumping of water, oil, and gas from underground reservoirs.

Karst terrain refers to areas characterized by dissolution of rocks such as limestone, gypsum, and salt, resulting in sinkholes (closed depressions), pinnacled bedrock, caves/caverns, and underground drainage systems. The tendency for and rate of solubility of rock formations is variable and is believed to be affected by rock mineralogy as well as local structural features, such as jointing, bedding characteristics, and differences in groundwater chemistry. The proposed Project route includes geologic units that have the potential to form karst-like features, which could eventually result in surface expression or subsidence. Based on a review of available Graphic Information System (GIS) data, MEP identified six areas of potential karst terrain along the proposed Project route through Texas (approximately between MP TX 17.0 to MP TX 24.0 and MP TX 32.0 to MP TX 39.0), Louisiana (approximately between MP LA 184.0 to MP LA 193.0), and Mississippi (approximately between MP MS 32.0 to MP MS 42.0, MP MS 87.0 to MP MS 95.0, and MP MS 106.0 to MP MS 118.0). However, field surveys completed by MEP did not identify any evidence of sinkholes or subterranean features along the proposed Project route. If such features were encountered during construction, an investigation would be performed in consultation with a qualified geotechnical professional and remedial action, if necessary, would be implemented in accordance with applicable safety standards.

As described in Section 3.1.2, the proposed Project would traverse areas in Texas, Louisiana, and Mississippi where oil and natural gas extraction is common. Extraction of oil and gas from sources underlying the proposed Project facilities has the potential to cause ground subsidence (USGS 2005b, USGS 2005c, USGS 2008). Further, unconsolidated sediments, which are abundant in the Mississippi Embayment, are susceptible to compaction and subsidence.

Ground subsidence can affect pipelines and aboveground facilities by causing a loss of support that would result in bending or rupture of pipelines and weaken the foundations of aboveground facilities. However, the proposed Project facilities would be designed and constructed to meet or exceed the federal safety standards set forth in the DOT's 49 CFR Part 192, which should ensure integrity of the Project facilities and minimize the potential for any pipe failures due to ground subsidence. Additionally, MEP would conduct regular patrols of the pipeline right-of-way during operations to identify conditions, including any areas of ground subsidence that might affect the safety or operation of the pipeline. We believe that use of the appropriate construction methods, as well as post-construction monitoring, would minimize the potential for any risk to the proposed Project posed by ground subsidence.

3.2 SOILS

3.2.1 Existing Soil Resources

Numerous soil types and soil associations would be crossed by the proposed Midcontinent Express Pipeline Project in Oklahoma, Texas, Louisiana, Mississippi, and Alabama. The soils that occur along the proposed pipeline route and at the proposed aboveground facility locations are listed in

Appendix G and also provided online in the eLibrary (FERC eLibrary, January 29, 2008), along with a description of their major characteristics.

The soil data traversed by the proposed Project were analyzed using NRCS soil survey databases and County and Parish soil surveys. The characteristics of soils for most of the counties traversed by the proposed Project were identified utilizing the computerized Soil Survey Geographic (SSURGO) database, which is a detailed (1:24,000 scale) GIS database created by NRCS. Soil data for Bryan County, Oklahoma; Webster and Claiborne Parishes, Louisiana; and Smith County, Mississippi, were obtained from printed Parish soil surveys and from the State Soil Geographic (STATSGO) database, a coarser-scale (1:250,000) GIS database created by the NRCS.

3.2.2 Major Soil Characteristics

Several soil characteristics have the potential to affect, or be affected by, construction and operation of the proposed Project, including erosion hazard, drainage class, presence of hydric soils, compaction potential, presence of shallow bedrock, revegetation potential, and prime farmland designation.

3.2.2.1 Pipeline Facilities

Erosion Potential

Erosion hazard is defined as the potential for soil to erode when exposed to climatic forces such as water, wind, and ice. Many factors influence the erodibility of soils, such as soil structure, drainage characteristics, texture, slope, climate, and vegetation. Soils crossed by the proposed Project are designated as having high, moderate and low erosion potentials.

Soil erosion potential varies along the proposed Project route, with the majority of the soils containing moderate to low erosion potential. However, about 32 percent of the soils that would be traversed by the proposed Project mainline are designated as having a high potential for erosion via water and about 6 percent are designated as having a high potential for erosion via wind. The areas of soils with a high potential for erosion via water are primarily localized to specific soil associations and/or regions, such as the Bosville-Bemow soils of Oklahoma (MP OK 4.7 to MP OK 6.9), the Woodfell fine sandy loams of Texas (MP TX 66.0 to MP TX 87.6), the Sacul fine sandy loams of Louisiana (MP LA 3.7 to MP LA 9.1 and MP LA 51.5 to MP LA 77.4), and the loess bluffs of Mississippi (MP MS 2.2 to MP MS 11.7; MP MS 16.3 to MP MS 19.7; and MP MS 21.2 to MP MS 27.3). Loess soils are discussed in more detail in Section 3.2.4.3 below. Soils with a high wind erosion potential are primarily composed of fine sands and are most prolific along the proposed Project route in Texas (MP TX 109.2 to MP TX 111.7). Only about 2 percent of the soils along the CenterPoint Lateral route are characterized as having a high erosion potential.

Presence of Hydric Soils

Hydric soils are defined as "soils that are formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions" (NRCS 2007a). Soils that formed under hydric conditions in their unaltered state are still considered hydric when artificially drained or altered for such purposes as agricultural use. Hydric soils are typically poorly drained, and the presence of hydric soils is one of the criteria used for defining wetlands (NRCS 2007a). Hydric soils may also be prone to compaction and rutting. About 52 percent of the soils that would be crossed by the proposed Project mainline and 90 percent of the soils that would be crossed by the CenterPoint Lateral routes are designated as hydric soils (see Appendix G and FERC eLibrary January 29, 2008). However,

much of the lands containing hydric soils are associated with large floodplains along large rivers (Red, Ouachita, and Mississippi Rivers) that are now protected by levees and/or agricultural lands classified as prior converted wetlands (i.e., wetlands that were drained by ditches or drain tiles to facilitate agricultural use). Thus, many of the soils classified as hydric have potentially been altered from their undisturbed state.

Compaction Potential

Compaction modifies the structure of soil and, as a result, alters its strength and drainage properties. Soil compaction decreases pore space and water-retention capacity, which restricts the transport of air and water to plant roots. As a result, soil productivity and plant growth rates may be reduced, soils may become more susceptible to erosion, and natural drainage patterns may be altered. Consequently, soil compaction is of particular concern in agricultural areas where crop yields would be adversely affected. Susceptibility of soils to compaction varies based on moisture content, composition, grain size, and density of the soil. Poorly-drained and fine-grained silt and clay soils are the most likely soils to experience compaction. The liquid limit, which is the percent water content at which a soil changes from a plastic state to a liquid state, is a good indicator of susceptibility to compaction and is used to approximate compaction potential. High liquid limits have greater compaction potential.

Approximately 20 percent of the soil associations that would be traversed by the proposed Project mainline are classified as having high compaction potential (see Appendix G and eLibrary January 29, 2008). About 82 percent of the soils along the CenterPoint Lateral route are considered susceptible to compaction, which corresponds to the high percentage of hydric soils that occur along the proposed route.

Presence of Shallow Bedrock

Rock can be introduced into surface layers of soil during various pipeline construction activities such as blasting and trenching. Such introductions can reduce soil moisture-holding capacity, thereby reducing soil productivity and creating poor revegetation potential. Additionally, some agricultural equipment may be damaged by contact with large rocks. The presence of shallow bedrock, which is defined as bedrock within 60 inches (5 feet) of the ground surface, is often used as an indicator of the potential for introductions of rock to surface layers of soils. Only about 2 percent of the soils that would be crossed by the proposed Project mainline route contain shallow bedrock, and these areas are limited to approximately 12.3 miles in Lincoln and Union Parishes, Louisiana, and approximately 2.8 miles in Bryan County, Oklahoma. No areas of shallow bedrock occur along the proposed CenterPoint Lateral route.

Revegetation Potential

Revegetation potential is a rating of the ability of soils to support revegetation efforts following construction-related disturbance. The potential for revegetation of each soil association was based on its limitations for reestablishing grasses, legumes, and plants after construction of the proposed Project. This determination is based on such factors as depth of the root zone, surface texture, available water capacity, wetness, slope, and soil temperature. Taking these factors into consideration, MEP characterized the soil associations that would be traversed by the proposed Project route as having poor, good, or moderate revegetation potential. All of the soils along the CenterPoint Lateral route have moderate to good revegetation potential, and about 57 percent of soils that would be affected by Project mainline construction are considered to have moderate to good revegetation potential. However, approximately 207.7 miles (42 percent) of the affected soils are considered to have poor revegetation potential.

Prime Farmland Soils

The NRCS defines prime farmland as "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses" (1993 NRCS). Soils classified as prime farmland have few or no rocks, a dependable water supply, and a favorable growing season; are not saturated for long periods of time; do not flood during the growing season; and are permeable to air and water. Prime farmland is an important resource because it provides the highest crop yield per unit of energy expended. The NRCS determines the prime farmland status of all soil units that have been surveyed; therefore, this information is available directly from the soil survey databases. Approximately 50 percent of the soils crossed by the proposed Project mainline are classified as prime farmland, and nearly all (about 97 percent) of the soils along the proposed CenterPoint Lateral route are designated as prime farmland (Appendix G and eLibrary January 29, 2008).

3.2.2.2 Aboveground Facilities

As described in Section 2.1, the aboveground facilities for the proposed Project include one booster and four new mainline compressor stations, 13 meter stations, nine pig launcher/receiver facilities, and 33 mainline valves. However, the proposed compressor stations are the only aboveground facilities that would encumber more than 5 acres of land during construction and operation, and are therefore the only aboveground facilities evaluated herein for impacts to soil resources. Impacts to soil resources associated with construction and operation of the remaining aboveground facilities would be negligible or have already been considered in the discussion of soil limitations for the proposed Project pipeline facilities.

With the exception of the proposed Vicksburg Compressor Station (MP MS 11.8), all of the proposed compressor station facilities would be sited on soils with predominantly good revegetation potential and low to moderate compaction potential. The majority of the soils at the proposed Atlanta Compressor Station site (MP TX 117.4) in Cass County, Texas, are prone to water and/or wind erosion. All of the other compressor station sites would be located in areas of generally low erosion potential. Shallow bedrock could be encountered at the proposed Perryville Compressor Station site (MP LA 109.0) in Union Parish, Louisiana, but would not be of concern at any of the other compressor station facility sites. All of the proposed compressor station facility sites would be located in areas of prime farmland soils, but the percentage of soils so designated would vary from site to site (see Appendix G and eLibrary January 29, 2008).

3.2.3 General Impacts and Mitigation

Construction activities associated with the proposed Project, such as clearing, grading, trenching, and backfilling, have the potential to affect soil resources through multiple mechanisms. The most significant effects include potential increases in soil erosion, compaction, and the loss of soil productivity and fertility by mixing of topsoil and subsoil horizons and changing drainage patterns. Removal of vegetative cover increases the possibility of erosion by wind and water. Mixing of topsoil with subsoil and compaction caused by the passage of heavy construction equipment can adversely affect revegetation potential and agricultural productivity. Alteration of the surface topography can affect hydrology, influencing stormwater runoff and soil drainage patterns.

In order to minimize and mitigate the impacts to soils resources described above, MEP would implement baseline mitigation measures for minimizing erosion and enhancing revegetation in upland areas. The mitigation measures that would be implemented are described in MEP's Plan, and include using erosion controls (e.g., slope breakers, silt fencing, and mulch) during construction to control runoff,

reducing the time of soil disturbance, and reestablishing contours and vegetative cover as soon as practicable. The more important aspects of MEP's Plan regarding erosion control are summarized below.

- At least one EI would be deployed for each construction spread during construction and restoration; the EI would have peer status with the other inspectors and would have the authority to stop activities that violate the environmental conditions of the FERC Certificate or other authorization, and order immediate corrective action.
- Project-related ground disturbance would be limited to the construction right-of-way, extra workspace areas, pipe storage and contractor yards, borrow and disposal areas, access roads, and other areas approved in the Certificate.
- Mixing of topsoil with subsoil would be minimized by stripping topsoil from either the full work area or from the trench and subsoil storage area in actively cultivated or rotated croplands and pastures, residential areas, hayfields, and other areas at the landowner's or land managing agency's request.
- Temporary erosion controls would usually be installed after vegetative clearing but prior to excavation. Erosion controls would be properly maintained throughout construction and repaired within 24 hours, if found ineffective. Mulch, which can consist of straw, hay, or erosion control fabric, would be used to stabilize the soil surface.
- Sediment barriers would be installed (such as silt fences and/or staked hay or straw bales, or sand bags) at the base of slopes adjacent to road crossings, to prevent siltation into waterbodies or wetlands crossed by or near the construction work area. These barriers would remain in place until revegetation is successful.
- Topsoil and subsoil would be tested for compaction at regular intervals in areas disturbed by construction activities. Soils disturbed by proposed Project-related activities would be revegetated. All turf, ornamental shrubs, and specialized landscaping would be restored in accordance with the landowner's request or the landowner would be compensated.
- All areas disturbed by Project-related activities would be revegetated or otherwise stabilized. Disturbed areas would be seeded in accordance with written recommendations from local soil conservation authorities or the request of the landowner or land management agency.
- Revegetation efforts would be confirmed through post-construction monitoring of all disturbed areas after the first and second growing seasons following completion of construction activities. In areas not used for agriculture, restoration would be considered successful when the density and cover of non-nuisance vegetation is similar to adjacent undisturbed land. In agricultural areas, revegetation would be considered successful if crop yields were similar to adjacent undisturbed portions of the same field.

Though a Stormwater Pollution Prevention Plan (SWPP) is no longer required for natural gas pipeline construction projects under current NPDES regulations, MEP has indicated that it would implement a Project-specific EMCP that specifies best management practices (BMPs), as recommended by the EPA in its guidance manual *Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices* (EPA 1992). The EMCP would also incorporate any applicable State, County, or Parish requirements and would further detail the erosion control structural BMPs, inspection procedures, and reporting protocols to be implemented during construction of the proposed Project.

3.2.3.1 Requested Modifications to the FERC Plan

As described in Section 2.3, MEP's Plan is consistent with the FERC guidance documents of the same name (the FERC Plan) with the exception of several proposed modifications. The FERC Plan is available for review on the FERC Internet website at www.ferc.gov/industries/gas/enviro/guidelines. The applicable FERC Plan sections and the associated modifications proposed by MEP are described in Table 3.2.4-1.

TABLE 3.2.4-1
Summary of Requested Modifications to the FERC Plan

Applicable FERC Plan Section	Resource Issue	Explanation / Basis for Requested Modification	Conclusion and Approval Status
III.F	Agency coordination	MEP proposes to make a "reasonable attempt" to obtain written recommendations from agencies regarding permanent erosion control and revegetation specifications for the Project.	We acknowledge MEP's coordination attempts and approve this modification.
IV.F.1.a	Temporary slope breakers	MEP proposes to use sediment logs in some locations as temporary slope breakers. These sediment logs would consist of an outside open-weave fabric filled with jute or other fibers that allow passage of water but retain sediment.	We find MEP's rationale to be justified and approve this modification.
VII.A.2	Post-construction activities	MEP proposes that landowner compensation could be utilized to mitigate reduced crop yields.	MEP has agreed to follow our Plan; therefore, compensation in lieu of restoration is denied.

Section III.F of the FERC Plan states that applicants must obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications. Based on the records of agency consultation submitted by MEP, we consider that MEP has made attempts to coordinate with resource agency recommendations regarding erosion control and revegetation specifications. In addition, we have included recommendations in Sections 3.2 and 3.5 of this EIS for MEP to consult further with applicable resource agencies regarding development of a loess soils management plan and identification of preferred seed mixtures and revegetation practices for the proposed Project, respectively. Given MEP's consultations to date and our recommendations for further focused consultations, we believe that the intent of the FERC Plan would be upheld. Therefore, we do not perceive MEP's proposed modification to Section III.F of the FERC Plan to represent a true modification.

Temporary slope breakers are a type of temporary erosion control structure that are intended to reduce stormwater runoff velocities and divert water to stabilized areas off of the construction right-of-way. Section IV.F.1.a of the FERC Plan specifies that temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags. The FERC Plan is performance based, and alternative measures that achieve the intent of the specifications are not perceived as true modifications. Therefore, we have no objection to the use of alternative measures, such as sediment logs installed per manufacturer or applicable soil and water conservation commission specifications, which would provide the same function as temporary slope breakers.

Section VII.A.2 of the FERC Plan states that revegetation in agricultural areas shall be considered successful if crop yields are similar to adjacent undisturbed portions of the same field and that restoration efforts must be continued until revegetation is successful. Compensation for lost production and/or crop damages during construction of the proposed Project would be addressed during easement negotiations between MEP and affected landowners. However, the provisions for restoration of agricultural lands contained in the FERC Plan are intended to ensure that agricultural lands affected by construction are returned to their preconstruction characteristics and productivity during operations. We do not consider that compensation in lieu of restoration would meet the intent of the performance-based standard for restoration of agricultural lands. MEP's previously requested modification to Section VII.A.2 of the FERC Plan was denied. MEP has revised its Plan, with proposed modifications regarding reasonable attempts to obtain written recommendations from local soil conservation authorities and land management agencies regarding permanent erosion control structures and revegetation specifications (Plan Section III.F.1) and the use of sediment logs as an additional option as temporary erosion control (Plan Section IV.F.1.a). We find these to be acceptable modifications and they are approved.

3.2.4 Site-specific Impacts and Mitigation

During the pre-filing and scoping period for the proposed Project, several members of the public expressed concerns that construction of the proposed pipeline could adversely affect agricultural areas through modification of soil characteristics and alteration of surface topography and drainage. We also received comments regarding the potential for erosion and sedimentation caused by construction of the proposed pipeline facilities. These comments are addressed below.

3.2.4.1 Pipeline Facilities

Erosion

Soil susceptibility to erosion varies along the proposed pipeline route and is a function of variables such as soil type, topography, vegetation, and climate. Though the majority of soils that would be crossed by the proposed pipeline have only slight erosion potential, some areas of highly erodible soils do occur along the proposed Project route. Severe erosion is not anticipated across most of the proposed Project route due to the relatively flat topography. In general, the potential for soil erosion along the construction right-of-way would be more pronounced in areas of side slopes and rolling terrain. Several phases of pipeline construction, including vegetation and pavement clearing/removing, grading, topsoil segregation, open trenching, and backfilling could destabilize the soil material and make it susceptible to water and wind erosion. Soils are most susceptible to erosion after vegetation is removed and before reestablishment of a vegetative cover after the pipeline is installed. Soil erosion would also result from off-road vehicle traffic on the right-of-way following construction.

Soil erosion can be reduced with both temporary and permanent erosion control practices. As discussed in Section 3.2.4, MEP's Plan describes the temporary and permanent erosion control practices that MEP would implement during construction and operation of the proposed Project. Temporary erosion controls would be installed immediately after the initial soil disturbance and in areas with steep slopes, erosion control devices would be installed at closer intervals than required for more moderately sloped areas. Wherever possible, contours would be returned to their approximate preconstruction condition and revegetated to stabilize the slope. As required by its Plan, MEP would initiate vegetation restoration efforts within 6 days of final grading, weather and soil conditions permitting. Revegetation measures are described further below and in Sections 2.3.1 and 3.5. Although there may be some short-term increase in erosion in sloped areas, these slopes would eventually be stabilized and permanent erosion control devices would be installed to avoid long-term erosion problems. Therefore, we do not

anticipate that significant long-term soil erosion impacts would result from construction and operation of the proposed pipeline facilities.

As required by MEP's Plan, measures would be implemented to control unauthorized vehicle access to the proposed pipeline right-of-way during construction and operation. These measures may include signs, fences with locking gates, slash and timber barriers, or planting appropriate trees or shrubs to block access to the right-of-way. MEP would coordinate with affected landowners regarding the installation of access barriers on their property.

Compaction Potential

Compaction damages the structure of the soil and restricts the transport of air and water to plant roots. As a result, soil productivity and plant growth rates may be reduced. In general, about 20 percent of the soils that would be crossed by the proposed Project mainline and about 83 percent of the soils along the CenterPoint Lateral route are considered prone to compaction due to the prevalence of hydric soils and poor drainage. Use of the construction right-of-way, additional temporary work spaces, and access roads by heavy construction equipment would result in soil compaction. The degree of compaction would depend on the composition, grain size, density, and moisture content of the soils at the time of construction. As described in MEP's Plan, measures such as restricting vehicular traffic, reducing loads, employing lower ground-pressure equipment, and rescheduling certain activities would be used when soil moisture is high to avoid and minimize compaction and rutting.

In agricultural, residential, and wetland areas topsoil would be segregated from other materials excavated from the trench and placed in piles that would usually be opposite the working side of the trench (see Sections 2.3.1 and 2.3.2). Therefore, heavy equipment would not travel on the piles, and compaction of excavated topsoils would be minimized. Due to construction-related activities, some topsoil and subsoil located along the working side of the construction right-of-way could be compacted. However, during cleanup and restoration activities, the topsoil and subsoils in all agricultural and residential areas would be tested for compaction at regular intervals using penetrometers or other appropriate devices in accordance with MEP's Plan. Any severely compacted areas would be plowed with a paraplow or other deep tillage device. In areas where the topsoil was segregated, the subsoil would also be plowed before replacing the segregated topsoil. These measures would ensure that any soil compaction resulting from construction of the proposed pipeline would be temporary; thus, significant or long-term impacts to soil resources associated with compaction are not anticipated.

Presence of Shallow Bedrock

Introduction of rock to surface soil layers would not be of concern across most of the proposed pipeline route as only about 2 percent of the soils that would be crossed by the proposed Project mainline route contain shallow bedrock, and these areas are localized in Lincoln and Union Parishes, Louisiana, and in Choctaw County, Alabama (see Appendix G and eLibrary January 29, 2008). However, trenching and mixing of the excavated materials in these areas would bring large rocks to the surface, which would adversely impact soil productivity and agricultural practices. In accordance with MEP's Plan, excess rock would be removed from at least the top 12 inches of soil in all rotated and permanent cropland, hayfields, pastures, residential areas, and other areas at the landowner's request. Following construction and restoration, the size, density, and distribution of rock in all construction work areas would be similar to that in adjacent areas not affected by construction. Thus, no significant impacts are anticipated as a result of pipeline construction through areas of shallow bedrock.

Revegetation Potential

As the majority of soils that would be disturbed during construction have moderate to good revegetation potential, vegetation restoration should not be of concern across most of the proposed pipeline route. However, approximately 43 percent of the soils that would be disturbed during construction of the proposed Project mainline are characterized as having poor revegetation potential. Revegetation is necessary for stabilization and restoration of the construction right-of-way, extra work spaces, and areas adjacent to access roads. Revegetation potential may be inhibited by soil erosion; loss of soil productivity through soil compaction; damage to soil structure; loss of soil fertility; damage to drainage systems; and unsuitable seed selection, methods, or planting conditions.

To avoid or minimize these conditions, as described above and in Section 2.3.1, MEP would return the construction right-of-way and extra work spaces to preconstruction contours to the extent feasible, control erosion by implementing the procedures in MEP's Plan, segregate and de-compact soils and spread topsoil on the right-of-way during final cleanup, repair any damaged drainage systems, place soil nutrients and lime in upland areas, and seed all disturbed areas. Further, MEP has consulted with NRCS and various other resource management agencies regarding appropriate seed mixtures for temporary and permanent stabilization and erosion control measures. Based on consultations to date, MEP proposes to follow the recommendations of the NRCS Critical Area Planting Specifications, as contained in the EMCP, where a landowner has not requested the use of a specific seed mix. In Section 3.5, we have also recommended that MEP complete additional agency consultations regarding preferred seed mixtures and revegetation practices for the proposed Project.

MEP would be responsible for successful revegetation of all disturbed areas, and MEP's Plan would be implemented to ensure that all mitigation would be sufficient. MEP would conduct at least 2 years of post-construction monitoring of all work areas to verify successful revegetation and/or determine the need for additional restoration. In accordance with MEP's Plan, revegetation would be considered successful if the density and cover of non-nuisance vegetation were similar in density and cover to adjacent undisturbed lands. If vegetation cover and density were not similar or there were excessive noxious weeds after two full growing seasons, a professional agronomist would determine the need for additional restoration measurements. In agricultural areas, revegetation would be considered successful if crop yields in areas affected by construction were similar to those in adjacent, undisturbed areas.

Drainage Systems and Drainage Patterns

Heavy equipment traffic and trenching along the construction right-of-way, as well as the removal of vegetation, could damage existing drainage systems or affect existing drainage patterns, thereby affecting farm management by causing wet or unworkable soil conditions. Future crop production would likely be reduced if such damage were not corrected. MEP indicates that no known drainage structures would be crossed by the proposed Project. However, consultations with the Mississippi NRCS indicated that buried irrigation lines may be traversed in Warren County, Mississippi. MEP would continue to work with the Mississippi NRCS and affected landowners prior to construction to confirm the locations of any buried drainage tiles or irrigation systems prior to construction. If active drainage tiles, culverts, or other drainage or irrigation facilities were damaged during construction, MEP would replace or repair them to a condition that is equal to or better than their preconstruction condition. Additionally, MEP would be responsible for ensuring that all areas affected by construction activities were finish-graded and restored as closely as possible to preconstruction contours. Although damage to drainage structures and patterns would result in short-term impacts, the corrective procedures to be implemented by MEP would avoid or minimize any long-term impacts.

Prime Farmland Soils

About 50 percent of the soils crossed by the proposed Project mainline route and nearly all (about 97 percent) of the soils along the proposed CenterPoint Lateral route are classified as prime farmland. As described previously, MEP would implement the measures included in its Plan to minimize and mitigate any impacts to prime farmland soils. Additionally, all impacts to prime farmland soils resulting from construction and operation of the proposed pipeline would be temporary since the proposed pipeline would be buried; and disturbed areas of prime farmland soils within the construction and permanent rights-of-way would largely revert to their preconstruction uses, such as agriculture, following restoration.

3.2.4.2 Aboveground Facilities

Construction of the proposed compressor station facilities would temporarily affect about 73.5 acres of land. Of that total, approximately 67.3 acres would be permanently impacted during operation of the proposed Project. With the exception of soils at the proposed Atlanta Compressor Station site, the soils that would be affected by construction and operation of the major aboveground facilities are not highly susceptible to erosion. Similarly, revegetation potential of the soils contained at all of the compressor station sites except the Vicksburg Compressor Station are generally characterized as good. MEP's Plan describes the temporary and permanent erosion control practices and revegetation measures that MEP would implement to control and minimize erosion during construction and operation. Additionally, MEP would follow the recommendations of the NRCS Critical Area Planting Specifications to establish vegetation outside of graveled or otherwise permanently stabilized portions of the aboveground facilities. Consequently any impacts to adjacent soils or sensitive resources from erosion would be minor. Though shallow bedrock could be encountered at the proposed Perryville Compressor Station site, bedrock in that area should be workable with standard construction equipment. The affected area would be converted to an industrial use for the life of the Project; therefore, we believe that any introduction of rock to surface soils would be less than significant.

Operation of the proposed aboveground facilities would result in a permanent conversion of about 39.4 acres of soils classified as prime farmland, including 15.0 acres at the Lamar Compressor Station; 1.7 acres at the Atlanta Compressor Station; 6.3 acres at the Perryville Compressor Station; 15.8 acres at the Delhi Compressor Station; and 0.6 acres at the Vicksburg Compressor Station. Given the prevalence of prime farmland soils within the affected Counties and Parishes, the permanent impacts to prime farmland soils associated with construction and operation of the proposed Project aboveground facilities would be less than significant.

3.2.4.3 Loess Soils

Loess soils are composed of fine, tightly packed, wind-blown sediments, which have been described as unique because of their ability to maintain near-vertical slopes, their occurrence in large deposits, and their high susceptibility to erosion. Loess soils form steep topographic bluffs to the east of the Mississippi and Yazoo Rivers near Vicksburg, Mississippi. The proposed Project route would traverse approximately 19.0 miles of loess deposits in Warren and Hinds Counties, Mississippi, primarily between MP MS 2.2 and MP MS 11.7, MP MS 16.3 and MP MS 19.7, and MP MS 21.2 and MP MS 27.3.

Loess soils found in Warren and Hinds Counties, Mississippi are particularly sensitive due primarily to their severe erosion potential, but also because of associated or other soil limitations, characteristics, or designations occurring in the area- including moderately steep topography and poor revegetation potential. To minimize impacts to loess soils, MEP developed a Loess Soil Management Plan (LSMP) in coordination with the Mississippi NRCS that would supplement the standard construction

and restoration measures contained in MEP's Plan and the NRCS Critical Area Planting Specifications. Elements of the LSMP include the following:

- erosion control measures including promotion of sheet flow and prevention of stormwater from entering the open trench, use of temporary trench wall stabilization measures, and wetting of loess soils to prevent wind erosion;
- restoration measures including site preparation smoothing and shaping, seedbed preparation, seeding, vegetative competition control, use of temporary covers, and use of sod;
- post-planting erosion control measures including mulching and control of concentrated stormwater flows; and
- post-restoration monitoring including monthly inspections for the first six months, bi-monthly inspections for the following 12 months, and semi-annual inspections for 18 to 30 months after restoration.

We believe that implementation and adherence to the impact avoidance, minimization and mitigation measures described in MEP's LSMP and its Plan would minimize the potential for impacts to loess soils.

3.2.4.4 Accidental Releases or Discovery of Contaminants

Other potential impacts during construction would include the accidental release of petroleum hydrocarbons or other hazardous materials, as well as the discovery of contaminated soils during trench excavation and grading activities. During construction, MEP would implement an SPCC Plan to prevent and contain, if necessary, accidental spills of any material that may contaminate soils, and to ensure that inadvertent spills of fuels, lubricants, or solvents are contained and cleaned up in an appropriate manner. MEP has prepared a SPCC Plan, included as a component of the EMCP, which describes the management of hazardous materials, such as fuels, lubricants, and coolants that would be used during construction.

MEP conducted a query of EPA and state environmental databases to locate any possible hazardous waste sites within the proposed Project area. Though 16 underground storage tanks were initially identified within 0.25 mile of the proposed Project route through Mississippi, subsequent consultation with the MDEQ indicated that all of these sites would be located over 3 miles from the proposed Project route. Additionally, MEP identified one site, the Barrett Refinery, in proximity to the Project route at MP MS 1.0 as having soil and groundwater contamination from benzene. However, consultations with the MDEQ indicated that there is no longer any soil contamination at the site due to evaporation, and any sediments potentially contaminated by groundwater flow from the site would be avoided by the proposed pipeline alignment and the Mississippi River HDD.

If contaminated soils were encountered during construction, MEP would implement procedures to identify and properly manage the contamination. MEP prepared a plan for the Unanticipated Discovery of Contaminated Soils or Groundwater, included as a component of the EMCP, which identifies the procedures to be implemented during construction in order to identify, test, and treat such materials. This plan also includes provisions for consultation with applicable resource agencies to develop site-specific plans for removal and disposal of contaminated material. If required, all potentially contaminated materials would be handled, transported, and disposed of in accordance with appropriate federal, state, and local regulations.

3.3 WATER RESOURCES

3.3.1 Groundwater

Groundwater is a significant source of public water supply in selected areas along the proposed Project route. Groundwater, in tandem with surface water supplies as described in Section 3.3.2, is used for irrigation, industrial purposes, and private drinking water. Although depth to groundwater is variable along the proposed Project route, groundwater is often found at or near the ground surface, and the proposed Project would be likely to encounter groundwater during construction activities in some areas.

Aquifers crossed by the proposed Project consist of either unconsolidated depositional deposits or lithified bedrock geologic units, whose varying properties are attributed to major geologic processes. Although many of these aquifers provide drinking water supplies (public and private), the Southern Hill Regional System is the only sole-source aquifer crossed by the proposed Project. Many of these aquifers have overlapping formations and are directly linked to each other. Additional information on the aquifers that occur along the proposed Project route, as well as sole-source aquifers, wellhead protection areas, wells, springs, and contaminated groundwater is presented below.

3.3.1.1 Aquifers

Antlers Aquifer

The proposed Project route traverses about 14.5 miles of lands underlain by the Antlers Aquifer in Bryan County, Oklahoma. Water well depths in the Antlers aquifer typically range from 50 to 800 feet below ground surface (bgs) (USGS 2002). This aquifer is considered a major aquifer in Oklahoma for public water supply, industrial uses, and irrigation, with yields commonly ranging from 50 to 500 gallons per minute (gpm), and sometimes reaching as high as 2,000 gpm.

Red River Alluvial and Terrace Aquifer

The proposed Project route traverses about 2.7 miles of lands underlain by the Red River Alluvial and Terrace Aquifer in Bryan County, Oklahoma. This aquifer is hydrologically connected with the Red River system, with the alluvial terraces typically located south of the Red River's floodplain. The alluvial terrace thickness ranges from 18 to 195 feet and the average thickness of the saturated components of the terrace is approximately 33 feet (USGS 2002). This aquifer is shallower than the Antlers, with depths to groundwater ranging from 15 to 30 feet bgs. Aquifer yields range from 200 to 500 gmp (USGS 2002). The aquifer is a major source for industrial, irrigation, and public water supply uses. Some domestic wells throughout this aquifer are associated with shallower stream-associated deposits.

Red River Alluvial Aquifer

The proposed Project route traverses lands underlain by the Red River Alluvial Aquifer in portions of Lamar, Red River, Franklin, Titus, Morris, and Cass Counties, Texas. This aquifer is hydrologically connected with the Red River system, with the alluvial terraces typically located south of the Red River's floodplain. The alluvial terraces' thickness ranges from 18 to 195 feet and the average thickness of the saturated components of the terrace is approximately 33 feet (USGS 2002). Groundwater is typically from 15 to 30 feet bgs. Aquifer yields range from 200 to 500 gpm (USGS 2002), which is used primarily for irrigation and aquaculture. However, the aquifer is not used for drinking water purposes due to poor water quality.

Trinity Group Aquifer

The proposed Project route traverses about 35 miles of lands underlain by the Trinity Group Aquifer (also known as the Antler Aquifer in Oklahoma) in Lamar County, Texas. Water well depths in the Trinity Group Aquifer typically range from 50 feet to 800 feet bgs (USGS 2002). This aquifer typically yields quantities of water ranging from 50 to 500 gpm, sometimes reaching as high as 2,000 gpm. The main uses of the aquifer are public supply, industrial and domestic purposes, and limited irrigation even though the aquifer has moderate amounts of fresh to slightly saline water.

Woodbine Aquifer

The proposed Project route traverses about 21 miles of lands underlain by the Woodbine Aquifer in Lamar County, Texas. The aquifer has a range of depths from 0 (where outcrops occur) to a maximum depth of approximately 2,000 feet bgs (USGS 2002), and water is drawn for domestic and public use and agricultural uses. Wells that extract water from this aquifer produce between 100 and 700 gpm (USGS 2002). Depending on the withdrawal location and depth, water quality from the aquifer can range from extremely poor, with excessive iron concentrations, to good.

Nacatoch Aquifer

The proposed Project route traverses approximately 7.5 miles of lands underlain by the Nacatoch Aquifer, which has a range of depths from 0 (where outcrops occur) to 150 feet bgs, in Lamar, Red River, and Franklin Counties, Texas. Water withdrawal wells in this aquifer have produced as much as 500 gpm (USGS 2002). Withdrawals at a rate exceeding the recharge rate for public and domestic use have caused a decline in groundwater levels within the aquifer in Red River County. Due to high levels of sodium carbonate, the aquifer is not useful for irrigation purposes, but is used for domestic and livestock uses.

Carrizo-Wilcox Aquifer

The proposed Project route traverses about 59 miles of lands underlain by the Carrizo-Wilcox Aquifer in Titus, Morris, and Cass Counties, Texas, and in Caddo and Bossier Parishes, Louisiana. Depths to the aquifer range from less than 200 feet to greater than 3,500 feet bgs. Water within the aquifer is slightly saline water, but is considered to be good quality for drinking water. Water quality is generally moderately-hard, but quality generally deteriorates with depth and becomes corrosive with high iron content along the northeastern edge of the aquifer. The major water uses are irrigation and municipal supply in Texas and domestic and public water supply in northwestern Louisiana.

Cypress Aquifer

The proposed Project route traverses about 32 miles of lands underlain by the Cypress Aquifer in Cass County, Texas. This aquifer is comprised of units from the Queen City and Carrizo-Wilcox formations, and the depth ranges from 16 to 840 feet bgs. Well yields are wide-ranging, from less than 50 gpm to over 500 gpm. Groundwater above 60 feet in this aquifer contains little or no iron, but is acidic and corrodes the metal pipes, pumps, and casing with which it comes into contact (Broom 1971). MEP's cathodic protection maintenance program, in accordance with DOT requirements, would protect the proposed Project pipeline from any potentially corrosive effects associated with groundwater of the Cypress Aquifer.

Queen City Aquifer

The proposed Project route traverses approximately 32 miles of lands underlain by the Queen City Aquifer in Cass County, Texas. Water depths within the aquifer range from 5 to 400 feet bgs, and the shallower depths of the aquifer provide excellent water quality, though quality declines below 200 feet bgs due to high iron content. Domestic usage is the main use of groundwater from this aquifer.

Chicot/Terraces Aquifer

The proposed Project route traverses lands underlain by this aquifer at 10 different locations in Caddo, Bossier, Webster, Union, and Ouachita Parishes, Louisiana. The Chicot Aquifer is a local name for the upper portion of the coastal lowlands aquifer system, which is described in further detail below (USGS 2002). This aquifer does not extend into southeastern Louisiana as a hydrologic unit (USGS 2002). The EPA has designated this aquifer as a Sole Source Aquifer (SSA) in southern Louisiana (see additional discussion below), but the designated portion of the aquifer would not be traversed by the proposed Project. The aquifer is shallow and unconfined and depths range from 20 to 150 feet bgs.

Alluvial Aquifers

The proposed Project route traverses lands underlain by these alluvial aquifers at 30 different locations in Caddo, Bossier, Webster, Claiborne, Lincoln, Union, Ouachita, Morehouse, Richland, and Madison Parishes, Louisiana. The proposed Project route crossings in Bossier, Caddo, Webster, and Claiborne Parishes are associated with the Red River Alluvial Aquifer, and crossings in Claiborne, Lincoln, Union, Ouachita, Morehouse, Richland, and Madison Parishes are associated with the Upper Mississippi River Alluvial Aquifer. Theses aquifers range in depth from 30 to 500 feet bgs, and have poor water quality, indicative by poor taste, odor, and appearance per drinking water guidelines. In addition, groundwater samples have exceeded LDEQ guidelines for color, TDS, and iron, and one well exceeded the human health risk guideline for arsenic.

In addition, the proposed Project route traverses lands underlain by other alluvial aquifers consisting of Holocene deposits that occur in all five states along major waterbodies crossed by the proposed Project route. Deposit depths range from 65 to 206 feet bgs and can yield up 2,000 gpm in Mississippi and Alabama.

Alluvial/Valley Trains Aquifer

The proposed Project route traverses lands underlain by this aquifer at several locations in Morehouse and Richland Parishes, Louisiana. This aquifer is hydraulically connected with the Mississippi River Alluvial Aquifer and the Mississippi River and its major streams. Little data exists on the quality of this aquifer, so it was assumed that it closely resembles the deposits in the river meanders.

Cockfield Aquifer

The proposed Project route traverses lands underlain by the Cockfield aquifer at 16 locations in Claiborne, Lincoln, and Union Parishes, Louisiana and along 14.6 miles in Clarke County, Mississippi. Aquifer depth was not reported but well depths range from 50 to 900 feet bgs in Louisiana and up to 250 bgs in Mississippi. Groundwater quality has moderate hardness and has fair quality when evaluating taste, odor and appearance.

Sparta Aquifer (Sparta Sand)

The proposed Project route traverses land underlain by the Sparta aquifer in Caddo, Bossier, Webster, Claiborne, Lincoln, Union, Ouachita, and Morehouse Parishes, Louisiana. This is a shallow, relatively new aquifer mostly recharged by rainfall and leakage from the overlying Cockfield Aquifer and/or deeper Carrizo-Wilcox Aquifer. The Sparta Aquifer is a primary source of groundwater in north-central Louisiana and is heavily developed for domestic, industrial and public water supply. Water quality is considered fair based on taste, odor, or appearance guidelines and met human health risk-based drinking water standards.

The proposed Project route traverses about 7.2 miles of lands underlain by the Sparta Sand in Warren, Hinds, Rankin, Simpson, Smith, Jasper, and Clarke Counties, Mississippi. Aquifer depths range from 69 to over 1,700 feet bgs. Within the Middle Claiborne Aquifer, which is primarily comprised of Sparta Sands and Memphis Sands, well yields range from 100 to 300 gpm (USGS 2002).

Southern Hills Regional Aquifer System

The Southern Hills Regional Aquifer System exists from southwestern Mississippi to southeastern Louisiana and consists of a series of hydraulically interconnected aquifers with a recharge area extending northward into Warren, Hinds, Rankin, Smith, Jasper and Wayne Counties, Mississippi. The Southern Hills Regional Aquifer System includes as many as 13 recognizable aquifer units in southeastern Louisiana linked by confining clay layers mixed with sandy deposits oriented in vertical layer formations. This aquifer ranges from 50 to more than 2,500 feet deep and generally has good water quality. This aquifer serves as the primary public and domestic water supplies for southwestern Mississippi, and it is estimated that 25 million gallons per day (mgd) are used for public consumption.

Coastal Lowlands Aquifer System

This aquifer overlaps with the Southern Hills Regional Aquifer System in Warren, Hinds, Rankin, Simpson and Smith Counties, Mississippi, but because of the formation descriptions by various authors, this aquifer is considered a separate unit. This aquifer is recharged by direct infiltration from precipitation from streams and outcrop areas. Wells withdrawing groundwater from this aquifer yield between 300 and 4,000 gpm, depending upon well depth (USGS 2002).

Southeast Louisiana Aquifer System

The proposed Project route traverses lands underlain by this aquifer system in Warren, Hinds and Simpson Counties, Mississippi. Groundwater depth ranges from 100 to 3,300 feet bgs, and well yields typically range from 100 to 2100 gpm. A local formation, known as the Miocene Catahoula Sandstone, is crossed by the proposed Project route in Warren County, Mississippi, and has the shallowest reported well depth (30 bgs) in this system.

Mississippi Embayment Aquifer System

The proposed Project route is traversed by lands underlain by this aquifer system in Jasper and Clarke Counties, Mississippi and in Choctaw County, Alabama. This regional aquifer system includes several water bearing formations of the Wilcox, Claiborne, and Vicksburg Groups. Some regional studies have included the Mississippi River Valley Alluvial Aquifer, as described below, as part of the Mississippi Embayment Aquifer System (USGS 2002). Groundwater yields of 500 mgs are typical for this aquifer system (USGS 2002) for agricultural, industrial and municipal uses. Rainfall infiltration, overbank stream flooding, and influx from adjacent aquifers recharge this system.

Mississippi River Valley Alluvial Aquifer System

The proposed Project route traverses 0.5 mile of lands underlain by this aquifer system in Warren County, Mississippi. The Mississippi River Alluvial Aquifer is hydraulically related to the Mississippi River and its major tributaries and is recharged by rainfall infiltration via overlying silt and clay layers. Groundwater depth ranges from 30 to 200 feet bgs. Standard wells constructed in the Mississippi River Valley Alluvial Aquifer System regularly produce over 500 gpm, with some irrigation wells yielding up to 1,000 to 5,000 gpm (USGS 2002).

Oligocene Aquifer System

The proposed Project route traverses lands underlain by this aquifer system in Warren, Hinds, Rankin, Simpson, Smith, Jasper, and Clarke Counties, Mississippi. This system includes formations from the Vicksburg Group, which includes important water-bearing formations such as the Forest Hill Sand. Other formations from the Upper Oligocene Vicksburg Group in Warren, Hinds, Smith and Jasper Counties do not bear useable quantities of water, but rather act as aquicludes overlying the Forest Hill Sand aquifer.

Catahoula Sandstone

The proposed Project route traverses about 90 miles of lands underlain by this aquifer at three locations in Warren, Hinds, Rankin, Simpson, Smith, and Jasper Counties, Mississippi. Depth, composition, water quality, and yield widely vary along the Project route, but generally aquifer thickness ranges from 0 to 900 feet bgs and well depths range from 30 to 440 feet bgs.

Mint Spring Marl and Forest Hill Sand Aquifer

The Mint Spring Marl overlies the Forest Hill Sand formation, part of the Vicksburg Group, and it occurs in all seven counties in Mississippi along the proposed Project route. The Mint Spring Marl is the water source for small domestic water wells in Hinds County, Mississippi. During the public comment period, MEP and the FERC received comments from Mr. Taylor and Mr. Moak regarding potential impacts to their wells in the Mint Spring Marl aquifer. MEP reviewed technical publications outlining the aquifer formations, and MEP determined the proposed Project route does not cross any outcrops of the Forest Hill Sand or Mint Spring Marl formations and passes no closer than five miles to the southwest of the Forest Hill Sand outcrop located between Raymond and Jackson, Mississippi. The nearest reported municipal wells tapping the Forest Hill Sand Aquifer are two miles south of Terry in Hinds County, Mississippi and seven miles north of the proposed Project in Rankin County, Mississippi.

The Forest Hill Sand Aquifer is also used as a source of private, residential water supply, including the wells of private land owners in the proposed Project area who provided comments about potential impacts to their water supply from construction of the Project. However, as described in Section 3.3.1.2, MEP does not expect any impacts to these wells.

Zilpha Clay, Winona Sand, and Tallahatta Formation

This formation of the Claiborne Group is not a water-bearing aquifer anywhere along the proposed Project route. In Mississippi and Alabama, this formation may locally function as an aquiclude, separating the Sparta Sand from the deeper aquifer formations of the Wilcox Group. No outcrops of this formation are crossed by the proposed Project route.

Lisbon and Watercourse Aquifers

The proposed Project route will traverse about 5.3 miles of lands underlain by these aquifers at two locations in Choctaw County, Alabama. The Lisbon Aquifer is used for public water supply in Clarke and Choctaw Counties, Alabama, where well depths typically range from 200 to 600 feet bgs. The nearest Choctaw County well is located over 5 miles from the proposed Project route, and the nearest municipal well in Clarke County is located about 25 to 30 miles from the proposed Project route. Although capable of providing large quantities of fresh water, the Watercourse Aquifer is not used as a public water supply in Choctaw County due to its high vulnerability to contamination.

Wilcox Group Aquifers (including the Nanafalia Formation)

The proposed Project route does not cross any outcrops of the Wilcox group; however, the Nanafalia formation is crossed by the proposed Project route in Choctaw County, Alabama. The shallowest depth reported in the Nanafalia Formation is 240 feet bgs. Though this aquifer is used as a public water supply in Choctaw County, Alabama, the nearest municipal wells are located more than five miles away from the proposed Project route.

3.3.1.2 Sole-source Aquifers

Sole-source or principal-source aquifers are defined by the EPA as those that supply a minimum of 50 percent of the drinking water used in the area overlying the aquifer. The areas served by these aquifers may not have readily available alternate water sources. The Southern Hills Aquifer in Mississippi is the only sole-source aquifer located in the proposed Project area. This aquifer is part of the larger Coastal Lowlands Aquifer, and is comprised of a collection of smaller aquifers such as the Chicot, Evangeline, Jasper, and Catahoula equivalents. The Southern Hills aquifer extends from north-central Mississippi to coastal areas of Mississippi and Louisiana, and is intersected by approximately 30 miles of the proposed Project route from MP MS 0.0 to MP MS 7.8 and MP MS 22.0 to MP MS 44.3. The Southern Hills regional aquifer system is the primary source of public and domestic water supplies in 10 southeastern Louisiana parishes and areas of southwestern Mississippi serving over 1,000,000 persons.

3.3.1.3 Aquifer Protection Programs

Texas, Louisiana and Mississippi have developed state or regional aquifer protection programs, but the states of Oklahoma and Alabama do not currently have any such programs in place. The State of Texas has instituted Groundwater Conservation Districts; Louisiana has designated "areas of ground water concern" based upon water quantity levels; and the State of Mississippi participates in the Mississippi, Arkansas, and Tennessee Regional Aquifer Study (MATRAS) to develop groundwater rules, regulations, and/or conservation programs for their respective states. The proposed Project would not cross any aquifers protected by either the Texas or Mississippi programs, but the proposed Project would cross one aquifer in Louisiana, the Sparta Aquifer, which has "areas of groundwater concern." However, proposed construction activities in this area would involve relatively shallow trenching and excavation that should not contact the aquifer, which has depths ranging from 50 to 700 feet bgs and reported well depths ranging from 153 to 773 feet bgs.

3.3.1.4 Wellhead Protection Areas

MEP consulted with the Oklahoma Department of Environmental Quality (ODEQ), Texas Commission on Environmental Quality (TCEQ), Louisiana Department of Environmental Quality (LDEQ), Mississippi Department of Environmental Quality (MDEQ), and the Geological Survey of Alabama (GSA) regarding the location of wellhead protection areas, which are designated to protect the

drinking water supplies obtained from municipal or community wells. Neither the ODEQ, TCEQ, GSA, nor the databases maintained by those agencies indicated the presence of any wellhead protection areas in proximity to the proposed Project route. MEP identified 22 overlapping wellhead protection areas associated with water wells operated by 12 individual water systems along the proposed Project route in Louisiana, and the wellhead protection area associated with one well (Well Identification Number [ID No.] 111101303) would be crossed twice in Union Parish, Louisiana. The proposed Project route in Mississippi would traverse three wellhead protection areas associated with wells operated by two water systems. The locations of the wellhead protection areas crossed by the proposed Project are listed in Table 3.3.1-1. Of the wellhead protection areas crossed by the proposed Project route, two wells (Local Well ID Nos. MS-HN-054.000 [MP MS 27.7] and MS-HN-055.000 [MP MS 27.7]) would have been located within 75 feet of proposed construction work areas. However, these wells are now avoided due to a route variation adopted by MEP.

TABLE 3.3.1-1
Drinking Water Wellhead Protection Areas Crossed by the Proposed Midcontinent Express Pipeline Project

Water System Name or Identification Number	Well Identification Number for Wellhead Protection Areas	County/Parish	Begin Milepost	End Milepost
1119030	1119030001, 1119030002	Webster, LA	LA 36.4	LA 38.5
1027003	1027003002	Claiborne, LA	LA 58.9	LA 60.9
1027009	127009003, 1027009002, 1027009004	Claiborne, LA	LA 64.4	LA 66.0
1061008	1061008001, 1061008002	Lincoln, LA	LA 77.4	LA 78.1
1061008	1061008003	Lincoln, LA	LA 81.8	LA 83.6
1111013	1111013003	Union, LA	LA 110.7	LA 112.3
1111017	1111017001, 1111017002	Union, LA	LA 116.4	LA 118.6
1073048	1073048001, 1073048002, 1073048003	Union and Ouachita, LA	LA 119.3	LA 121.8
1073002, 1073102, 1073080	1073002001, 1073102001, 1073080001	Ouachita, LA	LA 122.3	LA 126.8
1073011	1073011001, 1073011002	Ouachita and Morehouse, LA	LA 128.8	LA 130.8
1083017	1083017001, 1083017002	Morehouse and Richland, LA	LA 140.3	LA 142.3
Port Gibson – Ratliff Road Water Association	250093-01, 250093-02	Hinds, MS	MS 27.6	MS 28.6
East Side Water Association	250004-01	Hinds, MS	MS 42.9	MS 43.0

3.3.1.5 Wells and Springs

Based on consultation with affected landowners and review of information obtained from the Oklahoma Water Development Board, the Texas Water Development Board (TWDB), LDEQ, the Louisiana Department of Transportation and Development, MDEQ, the Mississippi Automated Resource Information System, and the Alabama Department of Environmental Management (ADEM), MEP identified 102 private wells and one public water supply well within 150 feet of proposed construction work areas. The identified uses of the wells include industrial, irrigation, livestock, domestic water supply, public municipal water supply, rig supply wells, and monitoring. The uses of many other

identified wells are currently unknown. These wells and their location relative to the proposed Project route are listed in Appendix E-1.

Based on review of the National Hydrography Dataset and agency consultations conducted by MEP, no springs were identified within 1 mile of proposed construction work areas. However, multiple affected landowners have commented that springs occurring near the proposed Project route could be affected by construction of the proposed Project and landowners consulted by MEP identified approximately 86 springs that could be located within 150 feet of proposed construction work areas. MEP has indicated that the known uses of the springs are domestic and for watering of livestock. The uses of many other identified springs, if they are currently being used, have not yet been determined. As with water wells, MEP would work with affected landowners to identify the exact locations and usage of any springs in relation to proposed construction work areas prior to construction.

3.3.1.6 Contaminated Groundwater

MEP conducted a query of the EPA and state environmental databases to locate any possible hazardous waste sites within the Project area. Though 16 underground storage tanks were initially identified within 0.25 mile of the proposed Project route through Mississippi, subsequent consultation with MDEQ indicated that all of these sites would be located over 3 miles from the proposed Project route. Additionally, MEP identified one site, the Barrett Refinery, in proximity to the Project route at MP MS 1.0 as having soil and groundwater contamination from benzene. That site has been subject to previous regulatory action and remedial actions have reportedly been conducted there. Additionally, consultations with MDEQ indicated that there is no longer any soil contamination at the site due to evaporation, and any sediments potentially contaminated by groundwater flow from the site would be avoided by the proposed pipeline alignment and the Mississippi River HDD.

3.3.1.7 General Impacts and Mitigation

No groundwater withdrawals are proposed in association with construction and operation of the proposed Project. The potential for impacts to groundwater resulting from construction and operation of the proposed Project is a function of the degree to which the Project facilities would cause localized changes to existing groundwater flow paths. The proposed Project would not affect changes in the overall quantity of groundwater, which is determined by the quantity of recharge to the aquifer, except to the extent that clearing of vegetation reduces evapotranspiration and pipeline trenching increases the potential for infiltration of rainfall. Increased infiltration and reduced evapotranspiration would result in increased recharge to groundwater, thus increasing groundwater storage at the expense of reduced surface runoff and loss to the atmosphere. Permanent effects would also occur to groundwater recharge as a result of the development of impervious surfaces and structures at the proposed aboveground facility sites. However, these effects would likely be minor considering the relatively small area of the pipeline trench, construction right-of-way, and aboveground facility structures relative to the total potential recharge area.

The pipeline trench could alter the quantity of groundwater that flows to specific points of discharge, such as a well or spring, by altering groundwater flow paths. Altered flow paths, in turn, would result in changes to the quality of groundwater at specific locations. Temporary impacts to groundwater flow paths would be most likely in shallow aquifers or groundwater features, such as the Red River Alluvial, Woodbine, and Chicot/Terraces Aquifers, but would not likely be permanent after construction and restoration. However, the proposed pipeline would not change regional flow paths because these are determined by larger-scale geologic features that form the hydrogeologic setting. Therefore, the proposed Project would not impact regional groundwater discharge conditions or quality. Additionally, aquifers that are typically deeper or that are overlain by other aquifers with separating layers, such as the Carrizo-Wilcox, Sparta, and Cockfield aquifers, would not be directly affected by

trenching and construction activities because their upper margin would be located well below the depth of the pipeline trench.

Dewatering of the pipeline trench during construction would be necessary where shallow groundwater is encountered. The water pumped from the excavation would be discharged in accordance with MEP's Procedures, and the potential impact of dewatering would be minimized by discharging the pumped water to well vegetated areas or properly constructed temporary retention structures that would promote infiltration and minimize or eliminate runoff. Dewatering would temporarily depress groundwater levels in the immediate vicinity of the trench. However, because trenching typically proceeds at a relatively rapid rate, the depression of the water table around the trench would be expected to recover rapidly once the trench is backfilled. Therefore, dewatering could temporarily affect flow patterns in nearby springs and shallow wells if present, but such impacts would likely be minor and temporary.

Backfill placed within the pipeline trench would typically be somewhat more permeable than the surrounding soil and rock units, and as a result the trench would act as a preferential pathway for groundwater flow in areas where it intersects the water table. Thus, the pipeline trench would potentially alter the existing groundwater flow patterns within shallow saturated zones. In general, however, most wells located along the pipeline receive water from deeper formations whose flow paths would not be affected by the trench. Additionally, MEP would install trench breakers at specified intervals, as specified in its Plan and Procedures, to reduce the potential for the trench to act as a preferential groundwater flow path. Trench breakers would reduce the ability of the trench to convey groundwater, and no long-term impacts to the water table or groundwater migration patterns would be anticipated as a result of the proposed Project. Conversely, if soils along the proposed Project route became compacted due to construction and operation of heavy machinery, infiltration and recharge of aquifers along the trench or right-of-way would be adversely impacted. However, MEP would implement the measures identified in its Plan, which includes testing and as applicable, mitigation for compacted soils (see Section 3.2 for additional discussion).

Accidental spills and leaks of hazardous materials could impact groundwater resources through introduction of contaminants, especially in highly permeable areas near wells. MEP would implement the spill prevention and control measures included in its Procedures to minimize these impacts. Additionally, MEP developed a Project-specific SPCC Plan, which describes management of the hazardous materials, such as fuels, lubricants, and coolants, that would be used during construction. Given the adoption of the measures in its Procedures and MEP's implementation of an SPCC Plan, the risk of accidental spills or other introductions of hazardous materials to groundwater would be effectively minimized.

MEP indicates that it does not anticipate encountering any contaminated groundwater plumes during construction or operation of the proposed Project. If contaminated groundwater was encountered, construction activities could cause it to be dispersed to other groundwater resources, surface water resources, or adjacent lands. In the event that hazardous materials were discovered during construction of the proposed Project, MEP would stop work, notify the appropriate state and federal agencies, and proceed in accordance with all applicable laws and regulations. MEP prepared a Plan for Unanticipated Discovery of Contaminated Soils or Groundwater, which is included as a component of the EMCP, to ensure that any hazardous materials encountered during construction are properly identified, tested, and disposed of in accordance with the appropriate state and federal regulations. We have reviewed this plan and find it acceptable.

3.3.1.8 Site-specific Impacts and Mitigation

The route of the proposed Project would cross the Southern Hills Aquifer, a designated sole-source aquifer, for approximately 30 miles between MP MS 0.0 to MP MS 7.8 and MP MS 22.0 to MP MS 44.3. However, the relatively deep aquifer system would not be directly affected by trenching and construction activities because its upper margin, at 50 feet bgs, would be located well below the typical 7-foot depth of the pipeline trench. Additionally, because the aquifer is in apparent equilibrium with the surface water elevations on both sides of the Mississippi River, it is unlikely that deeper subsurface disturbances such as the proposed Mississippi River HDD would alter the hydrogeologic profile of the aquifer or result in abnormal exchanges of surface waters or shallow groundwater to the underlying aquifer. Further, potential impacts to this aquifer or other groundwater sources are expected to be minimal due to the limited area used for pipeline construction and implementation of mitigation protocols contained in MEP's Plan and Procedures, SPCC Plan, and Plan for Unanticipated Discovery of Contaminated Soils or Groundwater. No other regional or state-protected aquifers would be disturbed or affected by the proposed Project given their absence from the proposed Project area or their depth relative to construction activity.

MEP identified a total of 102 private and one public water supply wells and 86 springs potentially located within 150 feet of proposed construction work areas (see Appendix E-1). FERC received numerous public comments expressing concern for potential impacts to water supply wells and springs, particularly those associated with the Mint Spring Marl and Forest Hill Sands Aquifers in Mississippi. No impacts would be expected to these aquifer systems since construction and operation of the proposed Project would not change regional flow paths that are determined by larger-scale geologic features forming the hydrogeologic setting. Additionally, there is little risk to the Mint Spring Marl and Forest Hill Sands Aquifers in Mississippi based on the specific location of shallow exposures of these systems in relation to the proposed Project route and/or their hydrogeologic characteristics. The nearest exposures of the Forest Hill Sands Aquifer occur more than 5 and 10 miles from the proposed Project route in Rankin and Hinds Counties, Mississippi, respectively. Much of the Mint Spring Marl Aquifer is protected by aquicludes, where little infiltration of shallow groundwater or surface water occurs. Shallow exposures of the Mint Spring Marl Aquifer are only known to occur at three road-cuts and one stream in western Hinds County, Mississippi. Though these areas are vulnerable to infiltration of pollutants, they would also be avoided by the proposed Project route.

Excavation of the pipeline trench and dewatering activities could temporarily alter the quantity of groundwater that flows to specific points of discharge, such as a wells or springs, but such impacts would likely be minor and temporary. Blasting could potentially result in more permanent modifications to subsurface flow patterns, but blasting is not anticipated in association with construction of the proposed Project. If blasting were determined to be required, MEP would notify the FERC before blasting and conduct all blasting in accordance with its Plan and Procedures and in compliance with all applicable federal, state, and local laws, permits, and authorizations. The measures included in MEP's Plan and Procedures specify development of a schedule for all blasting activities and provision for advance notice prior to blasting.

MEP reports that the locations of many of the wells and springs obtained from agency databases or identified through correspondence with affected landowners are not exact and uses of many of the wells and springs are currently unknown. To confirm the actual locations, depths, uses, and status of all private wells and springs identified in Appendix E, MEP would consult with affected landowners and re-evaluate those features in relation to proposed construction work areas in the field prior to construction.

To test for any unanticipated effects to private drinking water wells, MEP would offer pre- and post-construction monitoring of private drinking water wells located within 150 feet of proposed

construction work areas, as specified in its Water Well Testing Program, which is included as a component of the EMCP. MEP's proposed monitoring program includes yield testing and water sampling and chemical analysis according to standard methods specified by the EPA. If water quality or yield were found to be impaired due to the proposed Project, then MEP would provide a temporary water supply and re-test the well within 30 days. If the well was found to be impaired during the second test, then MEP would continue to provide a temporary water supply until it arranged for a permanent water supply that would be provided at MEP's expense. However, only 31 of the identified wells and springs located within 150 feet of proposed construction work areas are known to be used for domestic water supply. The remaining wells are used for public, industrial, irrigation, and observational purposes, but would also be potentially subject to the general groundwater impacts described above, such as impaired quality, decreased yield, or other disruptions of service. Similarly, many of the springs identified thus far by MEP are used for irrigation, domestic usage, and watering of livestock, and could also be subject to impaired quality or decreased yield. For these reasons, **we recommend that:**

- **Prior to construction, MEP should revise its Water Well Testing Program to include provisions for pre- and post-construction monitoring and mitigation, if required, for all wells and springs identified within 150 feet of the proposed construction work areas that are used for domestic water supply or agricultural use.**
- **MEP should file a report with the Secretary, within 30 days of placing its pipeline facilities in service, identifying all private and domestic water wells/systems and springs damaged by construction and how they were repaired. The report should include a discussion of any complaints concerning well or spring yield and/or quality and how each problem was resolved.**

Wellhead protection areas were identified in multiple areas within and along the proposed pipeline route, as identified in Table 3.3.1-1. However, all but one of the identified wellheads would be located more than 150 feet from proposed construction work areas. The well at MP LA 59.9 is operated by the Homer Water Company and its supervisor indicated that MEP's proposed testing procedures would be adequate. Of the other two wells identified in the Draft EIS as being located within 150 feet of the proposed construction area, one would be avoided by a route variation adopted near MP MS 27.7 and the other well located at MP MS 82.3 is actually located more than 400 feet away from the proposed construction area.

Given the distance of the proposed Project to other public water supply wells associated with wellhead protection areas, the anticipated lack of blasting, the surficial nature of the proposed pipeline trenching, the SPCC Plan, and in consideration of the general impact avoidance and minimization measures and our recommendations described above, we conclude that wellhead protection areas would not be significantly affected by construction and operation of the proposed Project.

3.3.1.9 Conclusion Regarding Groundwater Resources

Aquifers typically would not be impacted by the proposed Project given their depth and the relatively shallow nature of construction activity. Impacts to shallow aquifers and groundwater resources would be adequately avoided or minimized through implementation of the MEP's Plan and Procedures, SPCC Plan, and Plan for Unanticipated Discovery of Contaminated Soils or Groundwater, as well as our recommendations. Given these measures, we believe that impacts to groundwater resources would not be significant.

3.3.2 Surface Water Resources

3.3.2.1 Existing Surface Water Resources

Watershed Descriptions

Regulatory agencies typically manage surface water quality on a watershed basis, and watershed management activities include identification of issues, monitoring, planning, and implementation of measures to conserve or restore valuable surface water resources. For cataloging and regulatory purposes, the USGS divides river basins into Hydrologic Unit Codes (HUC), and the eight-digit HUCs are considered major watersheds. As described in Table 3.3.2-1, the proposed Project route will cross 25 major watersheds, 10 of which are water supply watersheds.

Surface Water Quality Standards and Designated Uses

Section 303 of the Clean Water Act requires each state to establish water quality standards that protect designated uses assigned to streams and rivers (e.g. public water supply, recreation, fishing, etc.) and develop numerical criteria to protect those designated uses. Impact avoidance and minimization measures are used to prevent or lessen effects, and mitigation may be required for unavoidable effects. The TCEQ, LDEQ, MDEQ, ODEQ, and ADEM are the state agencies required to set these water quality standards within Texas, Louisiana, Mississippi, Oklahoma, and Alabama, respectively. As discussed below, each surface waterbody in these states has been assigned a designated use, which characterizes the best intended uses of that waterbody. Water quality is evaluated and compared to established standards to determine if streams are meeting their designated uses. The designated uses of the waterbodies that would be crossed by the proposed Project are provided in Appendix E of this EIS.

Waterbody Crossings

Approximately 1,046 waterbodies would be crossed by the proposed Project route. Specifically, the proposed Project would cross 231 perennial streams, 774 intermittent streams, and 41 lakes or ponds. A table identifying these waterbodies, as well as their widths, locations along the proposed Project route, state waterbody classifications, and proposed crossing methods, is included as Appendix E of this EIS.

Construction of the proposed Project would require the crossing of 22 waterbodies in Oklahoma, all of which are designated for aesthetics, agriculture, fish and wildlife propagation, industrial and municipal process and cooling water, and primary body contact recreation. The Red River (MP OK 8.3) is also designated as a public and private water supply[1].

In Texas, 244 waterbodies would be crossed, all of which have a designated use of contact recreation. In addition to this basic designated use, each waterbody has been assigned additional classification(s), including: high aquatic life use, intermediate aquatic life use, limited aquatic life use, and public water supply. Big Sandy Creek (MP TX 39.5) is designated as a domestic and public water supply, and Black Bayou (MP TX 123.0) is designated as a public water supply[1].

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[1] None of these waterbodies are crossed within 3 miles of a water supply intake.

TABLE 3.3.2-1 Major Watersheds Crossed by the Proposed Midcontinent Express Pipeline Project		
Watershed Name	**Watershed HUC-8 Number**	**Parish or County Crossed**
Bois D'arc-Island	11140101	Bryan, OK and Lamar, TX
Blue[a]	11140102	Bryan, OK
Sulphur Headwaters	11140301	Lamar, TX
Lower Sulphur[a]	11140302	Franklin, Red River, Morris, and Cass, TX
White Oak Bayou[a]	11140303	Franklin, Morris, and Titus, TX
Caddo Lake[a]	11140306	Cass, Texas
Cross Bayou[a]	11140304	Cass, Texas and Caddo, LA
McKinney-Posten	11140201	Caddo and Bossier, LA
Red Chute	11140204	Bossier, LA
Bodcau Bayou	11140205	Bossier and Webster, LA
Loggy Bayou	11140203	Webster and Claiborne, LA
Bayou D'Arbonne	08040206	Claiborne, Lincoln, and Union, LA
Lower Ouachita-Bayou	08040202	Union and Ouachita, LA
Lower Ouachita[a]	08040207	Ouachita, LA
Boeuf	08050001	Ouachita, Morehouse, and Richland, LA
Bayou Macon	08050002	Richland and Madison, LA
Tensas[a]	08050003	Madison, LA
Lower Mississippi-Natchez[a]	08060100	Madison, LA and Warren, MS
Lower Big Black	08060202	Warren and Hinds, MS
Bayou Pierre	08060203	Hinds, MS
Middle Pearl-Strong[a]	03180002	Hinds, Rankin, and Simpson, MS
Upper Lear	03170004	Simpson, Smith and Jasper, MS
Lower Leaf	03170005	Jasper, MS
Upper Chickasawhay	03170002	Jasper and Clarke, MS
Middle Tombigbee-Chickasaw	03160201	Clarke, MS and Choctaw, AL

Note:
[a] Surface water supply watershed.

In Louisiana, 384 waterbodies would be crossed by the proposed Project mainline and CenterPoint Lateral routes, and all of these waterbodies have designated uses of primary contact recreation, secondary contact recreation, and fish and wildlife propagation. Several waterbodies are also designated for irrigation, and most streams are listed for multiple uses. In addition, several waterbodies are designated for either drinking water supply and/or Outstanding Natural Resource Waters. These include:

- Red River (MP LA 13.4), Cypress Bayou (MP LA 24.4), Black Bayou (MP LA 44.3), Ouachita River (MP LA 119.5), and Bayou De Siard (MP LA 123.2), which are designated for drinking water supply[1];

- Bayou Dorcheat (MP LA 42.2) and Bayou D'Loutre (MP LA 113.1), which are designated as Outstanding Natural Resource Waters; and
- Bayou D'Arbonne, which is designated for both drinking water supply (MP LA 59.6) and Outstanding Natural Resource Water (MP LA 90.6)

In Mississippi, the construction of the proposed Project would require the crossing of 387 waterbodies, all but three of which are designated for fish and wildlife propagation. The Pearl (MP MS 44.8), Strong (MP MS 73.1), and Chickasawhay Rivers (MP MS 137.8) are designated for recreation. Similarly, each of the nine proposed waterbody crossings in Alabama are designated for fish and wildlife.

No waterbodies occur at the proposed aboveground facility sites or pipe storage and contractor yards, but MEP has proposed that numerous additional temporary workspaces would be located within 50 feet of waterbodies as listed in Appendix E. Section V.B.1 of MEP's Procedures states that all extra work areas, such as staging areas and spoil storage areas, should be located at least 50 feet from the edge of a waterbody, except where adjacent uplands consist of actively cultivated or rotated cropland or other disturbed land. In accordance with its Procedures, prior to the start of construction MEP would file a site-specific construction plan for each extra workspace area that would not be located at least 50 feet from the edge of a waterbody for review and approval by the Director of OEP.

Major and Navigable Waters

We define major waterbodies as those greater than 100 feet in width at the time of crossing, and according to 33 CFR Part 329, navigable waters of the United States "are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce." The proposed Project route would cross 40 major waterbodies and 14 waterbodies that are considered navigable, all of which, except the Tensas River and Bayou D'Arbonne (MP LA 106.6), are also defined as major waterbodies (see Table 3.3.2-2).

Sensitive Waterbodies

Sensitive waterbodies include those streams designated as one or more of the following: having special status by federal or state resource agencies, providing habitats for threatened and endangered species, having potable water intakes within 3 miles downstream of the proposed pipeline crossing, or not attaining specified water quality uses. The sensitive waterbodies traversed by the proposed Project route are listed in Table 3.3.2-3, along with the basis for such designation.

No surface water intakes are located within 3 miles downstream of the proposed Project waterbody crossings, but one state designated surface water protection area would be traversed by the proposed Project route in Texas. Consultations with TCEQ indicated that the proposed Project route would traverse a Source Water Assessment and Protection (SWAP) area located near the White Oak Creek Wildlife Management Area at nine individual points between MP TX 82.4 and MP TX 93.1. SWAPs identify areas that supply public drinking water sources and inventory potential sources of contamination in those areas. The White Oak Creek Wildlife Management Area itself would not be crossed by the proposed Project.

TABLE 3.3.2-2
Major and Navigable Waterbodies that would be Crossed by the Proposed Midcontinent Express Pipeline Project

Waterbody	Milepost	Length of Crossing (feet)	Major Waterbody	Navigable Waterbody	Proposed Crossing Method
Red River	OK 8.3	520	X		HDD
Bois D'Arc Creek	TX 2.8	148	X		HDD
Unnamed pond	TX 14.9	144	X		Open-cut
Brushy Creek	TX 47.0	176	X		HDD
Unnamed Tributary of Brushy Creek	TX 50.2	130	X		HDD
Sulphur River	TX 50.4	226	X		HDD
Sulphur River	TX 52.2	103	X		HDD
Unnamed pond	TX 61.4	227	X		Open-cut
Unnamed pond	TX 91.7	106	X		Open-cut
Unnamed pond	TX 114.5	208	X		HDD
Black Bayou	TX 122.3	154	X		Open-cut
Red River	LA 13.4	2619	X	X	HDD
Long Lake (Bodcau Bayou)	LA 35.7	142	X		HDD
Bayou Dorcheat	LA 42.2	174	X		HDD
Unnamed pond	LA 82.3	135	X		Open-cut
Bayou D'Arbonne	LA 90.6	206	X	X	HDD
Cypress Creek	LA 96.8	107	X		Open-cut
Bayou D'Arbonne	LA 106.6	77		X	HDD
Bayou D'Loutre	LA 113.1	352	X		HDD
Ouachita River	LA 119.5	508	X	X	HDD
Bayou DeSiard	LA 123.2	285	X		HDD
Little Bayou Boeuf/Wham Brake	LA 130.6	130	X		HDD
Unnamed Tributary of Bayou Galion	LA 131.9	148	X		Open-cut
Bayou Lafourche	LA 141.0	267	X		HDD
Boeuf River	LA 143.9	136	X	X	HDD
Cypress Bayou	LA 147.4	126	X		Open-cut
Unnamed tributary	LA 151.5	102	X		Open-cut
Unnamed pond	LA 156.8	213	X		Open-cut
Bayou Macon	LA 158.8	240	X	X	HDD
Joes Bayou	LA 163.0	108	X		HDD
Tensas River	LA 166.0	64		X	HDD
Unnamed pond	LA 192.3	105	X		Open-cut
Mississippi River	LA 194.2	3,125	X	X	HDD
Big Black River	MS 12.7	249	X	X	HDD

TABLE 3.3.2-2 (continued) Major and Navigable Waterbodies that would be Crossed by the Proposed Midcontinent Express Pipeline Project					
Waterbody	**Milepost**	**Length of Crossing (feet)**	**Major Waterbody**	**Navigable Waterbody**	**Proposed Crossing Method**
Pearl River	MS 44.8	190	X	X	HDD
Strong River	MS 73.1	120	X	X	HDD
Leaf River	MS 97.0	185	X	X	HDD
Chickasawhay River	MS 137.8	130	X	X	HDD
Tallabogue Creek	MS 145.1	200	X		Open-cut
Tallabogue Creek	MS 145.1	200	X		Open-cut
Tallabogue Creek	MS 145.2	200	X		Open-cut
Unnamed Tributary of Macon Bayou	CPL 1.8	123	X		HDD
Bayou Macon	CPL 3.5	243	X	X	HDD

TABLE 3.3.2-3 Sensitive Waterbodies Crossed by the Proposed Midcontinent Express Pipeline Project [a]			
Waterbody Name	**Approximate Milepost**	**Impairment, T&E Species, or Special Designation**	**Proposed Crossing Method**
Red River	OK 8.3	Pallid sturgeon, interior least tern, bluehead shiner	HDD
Sanders Creek	TX 9.4	Ouachita rock-pocketbook mussel, mussel sanctuary	HDD
Sulphur River	TX 50.4	Gulf sturgeon and pallid sturgeon; Paddlefish and shovelnose sturgeon	HDD
White Oak Creek	TX 59.8	Low dissolved oxygen from non-point and point sources	HDD
Black Bayou	TX 123.0	Low dissolved oxygen, pH, and bacteria from unknown sources	Open-cut
Kelly Bayou Canal	LA 10.9	Fecal coliform from pasture grazing	Open-cut
Red River	LA 13.4	Color from upstream sources and sulfates from natural and out-of-state sources. Pallid sturgeon, interior least tern, and bluehead shiner	HDD
Cypress Bayou	LA 24.4	Color from natural sources	Open-cut
Bodcau Bayou/Long Lake	LA 35.7	Low dissolved oxygen from natural conditions	HDD
Bayou Dorcheat	LA 42.2	Mercury from atmospheric deposition and unknown sources. Louisiana Scenic River	HDD
Black Bayou	LA 44.3	Color from natural sources	Open-cut
Bayou D'Arbonne	LA 59.6	Color, fecal coliform, low pH from irrigation of crops and municipal point source discharge	Open-cut
Bayou D'Arbonne	LA 90.6	Fecal coliform from an unknown source. Nationwide Rivers Inventory.	HDD

TABLE 3.3.2-3 (continued) Sensitive Waterbodies Crossed by the Proposed Midcontinent Express Pipeline Project [a]			
Waterbody Name	**Approximate Milepost**	**Impairment, T&E Species, or Special Designation**	**Proposed Crossing Method**
Cypress Creek	LA 96.8	Fecal coliform from wastewater discharges and sulfates and total dissolved solids from natural conditions	Open-cut
Bayou D'Arbonne	LA 106.6	Louisiana Scenic River. Nationwide Rivers Inventory.	HDD
Bayou D'Loutre	LA 113.1	Mercury from atmospheric deposition and unknown sources. Nationwide Rivers Inventory. Louisiana Scenic River	HDD
Ouachita River	LA 119.5	Color, mercury, nitrate/nitrite, dissolved oxygen, total phosphorus from natural conditions, atmospheric deposition, irrigation of crops, hydro-structures, and other unknown sources. Federally listed mussel species and bluehead shiner.	HDD
Bayou De Siard	LA 123.2	Mercury from atmospheric deposition and unknown sources	HDD
Little Bayou Boeuf/Wham Brake	LA 130.6	Dioxin from an industrial point source discharge	HDD
Coulee Ditch	LA 134.2	Previous possible Pink mucket pearly mussel find, since discounted.	Open-cut
Bayou Lafourche	LA 141.0	Turbidity from agricultural practices	HDD
Boeuf River	LA 143.9	Carbofuran, DDT, mercury, sedimentation, total suspended solids, toxaphene, and turbidity from irrigation of crops, industrial point source discharge, atmospheric deposition, and other unknown sources	HDD
Big Creek	LA 151.8	Atrazine, carbofuran, DDT, methyl parathion, total suspended solids, and turbidity from irrigation of crops	Open-cut
Macon Bayou	LA 158.8	DDT, total suspended solids, and turbidity from irrigation of crops and non-irrigated crops	HDD
Joes Bayou	LA 163.0	Carbofuran, DDT, total suspended solids, and turbidity from irrigation of crops and non-irrigated crops	HDD
Tensas River	LA 166.0	Carbofuran, DDT, total suspended solids, toxaphene, and turbidity from irrigation of crops and non-irrigated crops	HDD
Mississippi River	LA 194.2	Interior least tern, fat pocketbook mussel, Gulf sturgeon, pallid sturgeon, blue sucker, and shovelnose sturgeon.	HDD
Big Black River	MS 12.7	Biological impairment and pesticides from unknown sources. Nationwide Rivers Inventory. Pyramid pigtoe mussel and rabbitsfoot.	HDD
Bakers Creek	MS 19.4	Biological impairment and pathogens from unknown sources, recreational fishery	Open-cut
Turkey Creek	MS 25.9	Bayou darter	HDD

TABLE 3.3.2-3 (continued)
Sensitive Waterbodies Crossed by the Proposed Midcontinent Express Pipeline Project [a]

Waterbody Name	Approximate Milepost	Impairment, T&E Species, or Special Designation	Proposed Crossing Method
Fourteenmile Creek	MS 29.0	Organic enrichment from nutrients, low dissolved oxygen, sedimentation, and biological impairment from unknown sources	Open-cut
Rhodes Creek	MS 41.1	Biological impairment from unknown sources	Open-cut
Pearl River	MS 44.8	Organic enrichment from nutrients, low dissolved oxygen, sedimentation, and pesticides from unknown sources. Nationwide Rivers Inventory. Gulf sturgeon, pearl darter, inflated heelsplitter mussel, delicate spike mussel, and ringed map turtle.	HDD
Steen Creek	MS 47.3	Gulf sturgeon	Open-cut
Dabbs Creek	MS 63.2	Biological impairment from unknown sources, recreational fishery.	Open-cut
Campbell Creek	MS 68.3	Biological impairment from unknown sources, recreational fishery	Open-cut
Strong River	MS 73.1	Nationwide Rivers Inventory. Critical habitat for Gulf sturgeon.	HDD
Oakohay Creek	MS 86.7	Biological impairment, organic enrichment from nutrients, low dissolved oxygen, and sedimentation from unknown sources, recreational fishery	Open-cut
Leaf River	MS 97.0	Biological impairment and sedimentation from unknown sources. Critical habitat for Gulf sturgeon. Habitat for Yellow-blotched Map Turtle, Pearl Darter and Delicate Spike	HDD
West Tallahala Creek	MS 98.3	Recreational fishery.	Open-cut
Piney Branch Creek	MS 108.1	Bay Springs salamander.	Open-cut
Tallahoma Creek	MS 108.5	Biological impairment from unknown sources	Open-cut
Tallahala Creek	MS 115.6	Biological impairment from unknown sources	Open-cut
Souenlovie Creek	MS 134.6	Gulf sturgeon, Pearl darter, Recreational fishery	Open-cut
Chickasawhay River	MS 137.8	Biological impairment and sedimentation from unknown sources. Nationwide Rivers Inventory. Critical habitat for Gulf sturgeon. Yellow-blotched map turtle and pearl darter.	HDD
Buckatunna Creek	MS 147.8	Recreational fishery.	Open-cut
Okatuppa Creek	AL 2.2	recreational fishery	Open-cut
Macon Bayou	CPL 3.5	DDT, total suspended solids, and turbidity	HDD

Note:
[a] Impairment based on the following documents – Oklahoma DEQ 2004 Water Quality Assessment Integrated Report, 2006 Draft Texas water quality inventory and 303(d) list, 2006 Final draft Louisiana water quality inventory: Integrated report, Draft Mississippi 2006 303(d) list of impaired water bodies and 303(d) modifications, 2006 Alabama water quality and monitoring and assessment report.

No streams designated as Wild and Scenic Rivers by the NPS would be crossed by the proposed pipeline route. However, six streams, Bayou D'Arbonne (MP LA 90.6 and MP LA 106.6; two separate crossings), Bayou D'Loutre (MP LA 113.1), Big Black River (MP MS 12.7), Pearl River (MP MS 44.8), Strong River (MP MS 73.1), and Chickasawhay River (MP MS 137.8) have been designated by NPS as being listed on the NRI. Streams included in the NRI are considered to possess "outstandingly remarkable natural or cultural values judged to be of more than local or regional significance" (NPS 2007a). Two of the NRI-listed streams traversed by the proposed Project in Louisiana, Bayou D'Arbonne (MP LA 106.6) and Bayou D'Loutre (MP LA 113.1), as well as Dorcheat Bayou (MP LA 42.1), have been designated by Louisiana as Natural and Scenic Rivers, pursuant to the Louisiana Scenic Rivers Act. These streams are recognized as having unique and diverse characteristics, such as wilderness, scenic, and free-flowing segments, and they are protected through management by LDWF (2007). No NPS-designated Wild and Scenic Rivers will be crossed by the proposed pipeline route. Additional information on these NRI-listed streams and Louisiana Natural and Scenic Rivers, including the basis for such designation, is provided in Section 3.8.

A total of 14 waterbodies that potentially provide habitat for or support occurrences of federally- or state-listed rare, threatened, and endangered species would be traversed by the proposed Project (see Table 3.3.2-3). Among these, the federally endangered pallid sturgeon inhabits the Red (MP OK 8.3 and LA 13.3) and Mississippi Rivers (MP LA 193.9). The federally threatened Gulf sturgeon inhabits the Pearl (MP MS 44.8), Leaf (MP MS 97.0), Strong (MP MS 73.1), and Chickasawhay (MP MS 137.8), and Mississippi River systems in Mississippi and Alabama within the Project area, and both the Pearl and Chickasawhay Rivers are designated as critical habitat for the species. The FWS has also indicated that the federally-listed ringed and yellow-blotched map turtles are known to occur in the Pearl River and the Leaf and Chickasawhay Rivers, respectively, within the Project area. Similarly, the federally-listed bayou darter may occur in Tallahala Creek (MP MS 33.7), and the Pearl darter, a federal candidate species, could potentially occur in the Chickasawhay, Leaf, Pearl, and Strong Rivers. Additionally, field surveys conducted by MEP identified a possible specimen of the federally-listed pink mucket pearly mussel in Coulee Ditch (MP LA 134.2) in Louisiana, but this preliminary identification was later discounted in coordination with FWS. Sanders Creek (MP TX 9.4) is designated as a mussel sanctuary and may also support the federally endangered Ouachita rock pocketbook mussel. The fat pocketbook mussel may occur in the Mississippi River. Additional discussion of endangered, threatened, and special-status species and their habitats is provided in Section 3.7.

In total, 35 waterbodies that would be crossed by the proposed Project route in Texas, Louisiana, and Mississippi are listed as impaired waterbodies. The location of these waterbodies and the causes of impairment are listed in Table 3.3.2-3. No impaired waterbodies were identified in Oklahoma or Alabama along the proposed Project route. MEP consulted with the TCEQ, MDEQ, and LDEQ and regarding the potential occurrence of contaminated sediments in the impaired waterbodies crossed by the proposed Project route. Based on the results of these consultations, there are no records of contaminated sediments in the waterbodies that would be crossed by the proposed Project.

3.3.2.2 General Impacts and Mitigation

MEP's proposed methods for accomplishing pipeline installation across each identified waterbody are listed in Appendix E. Waterbody crossings would be accomplished using "wet" open-cut or "dry" HDD methods, as described below and in Section 2.3.2. As proposed, most (approximately 96 percent) of the crossings would be accomplished using open-cut methods. The remainder of the crossings, including 26 of the 40 major waterbody crossings and all navigable waterways, would be accomplished using HDD (see Table 3.3.2-2). For those major waterbodies that would not be crossed via HDD, MEP's Procedures require that MEP file detailed, site-specific construction plans and scaled drawings identifying all areas that would be disturbed by construction activities. These site-specific plans

would be developed in consultation with appropriate state and federal resource agencies and would depict the proposed locations of extra work areas, spoil storage areas, sediment control structures, as well as any mitigation for potential navigational issues.

Though MEP has identified a proposed crossing method, either open-cut or HDD, for each identified waterbody, it has also indicated that the actual crossing method used, except for the identified HDD crossings, would be determined at the time of construction based on waterbody characteristics and site conditions. In addition to HDD methods, MEP also discussed two other "dry" crossing approaches. These include the flumed and dam-and-pump crossing methodologies, which are described in Section 2.3.2. Although typically unsuitable in streams with broad channels, unstable banks, or high flow rates, flumed and dam-and-pump crossing methods typically result in less generation of turbidity and suspended sediments than open-cut methods.

General impacts to waterbodies, including sensitive waterbodies, potentially resulting from pipeline construction, accidental spills, and construction of aboveground facilities are discussed in more detail below.

Pipeline Construction

Construction of the proposed pipeline through waterbodies using open-cut methods would result in several temporary effects to water quality and instream habitat. The clearing and grading of stream banks, instream trenching, trench dewatering, and backfilling of the instream trench would affect water quality and instream habitat by increasing turbidity, sedimentation, water temperature, modifying aquatic habitat and decreasing dissolved oxygen (DO) levels. The use of heavy equipment or other vehicles in and near surface waterbodies could also introduce chemical contaminants, such as fuels and lubricants, into surface waters or may result in accidental spills during construction.

The extent of the potential impacts resulting from increased sedimentation and turbidity would depend on the amount of material disturbed, the sediment grain size, stream velocity, and channel stability. These factors would determine the amount of suspended sediment and the downstream distance that the suspended sediment is transported. In general, where the streambed consists of fine materials such as sand and silt, as is likely along the proposed Project route, the increase in turbidity and suspended sediments would be relatively greater when compared to locations where the streambed consists of coarser materials such as gravel and cobble. However, stream gradients tend to be relatively low in the area of the proposed Project; thus, stream velocities would also tend to be low, indicating that suspended sediments within these streams typically would be transported over short distances.

Increased turbidity can reduce light penetration into the water and thereby reduce photosynthetic activity and levels of DO in the water column. Organic materials suspended in the water can further reduce DO by increasing the biochemical oxygen demand (BOD). Resuspension of sediments can also introduce contaminants, metals, and nutrients bound to the sediments into the water column. However, because there are no known contaminated sediments located along the proposed Project route, adverse impacts resulting from resuspension of contaminants would be unlikely. If contaminated soils or sediments were encountered during construction, MEP would implement its Plan for Unanticipated Discovery of Contaminated Soils or Groundwater, which is included as a component of the EMCP, to identify, test, and treat such materials in accordance with the appropriate state and federal regulations.

In order to minimize and mitigate the impacts to surface water resources described above, MEP would implement baseline mitigation measures for minimizing the extent and duration of construction-related disturbance on waterbodies, as defined in its Procedures. These measures include, but are not limited to:

- requirement to obtain all necessary permits from the COE and state agencies prior to construction and notify applicable state agencies at least 48 hours before commencing with instream trenching;
- use of EIs during construction;
- route the proposed pipeline as close to perpendicular to the axis of the waterbody as practicable and minimize the number of individual crossings where waterbodies meander or have multiple channels;
- limit the use of equipment within the waterbody to that necessary to construct the crossing, and utilize equipment bridges for passage of other construction equipment;
- placement of spoil at least 10 feet away from the water's edge with installation of sediment barriers to prevent the flow of spoil or silt-laden water to the waterbody;
- completion of all instream construction activity, including stabilization and re-contouring of banks, within 24 hours for minor waterbody crossings and 48 hours for intermediate waterbody crossings;
- use of temporary erosion and sediment control measures such as sediment barriers and trench plugs; and
- restoration activities including restoration of preconstruction bank contours, installation of slope breakers, and revegetation of disturbed riparian areas.

Removal of vegetation from riparian areas would cause an increase in surface runoff and erosion from the pipeline corridor. However, as specified by MEP's Procedures, the use of temporary and permanent sediment controls (e.g., silt fence and slope breakers) would minimize this impact by directing surface runoff to well vegetated areas along the sides of the construction right-of-way. Removal of riparian vegetation and the loss of associated shading at waterbody crossings would result in elevated water temperatures, but potential impacts would not be expected to be significant because of the limited amount of streambank canopy that would be cleared relative to the existing riparian vegetation in most cases. Following construction, trees and shrubs would also be allowed to reestablish themselves on waterbody banks except for a 10-foot-wide corridor centered over the pipeline.

Aboveground Facilities

Construction of the proposed aboveground facilities and activities at the proposed pipe storage and contractor yards would not directly affect any waterbodies. To minimize indirect impacts to waterbodies, MEP would implement the erosion control measures described in its Plan and EMCP. These measures include use of erosion controls (e.g., slope breakers, silt fencing, and mulch) during construction to control runoff, reducing the time of soil disturbance, and reestablishing contours and vegetative cover as soon as practicable (see Section 3.2). Given these factors and protective measures, any affects to waterbodies associated with construction and operation of the proposed aboveground facilities would be minor.

Construction Spills

The accidental release of petroleum hydrocarbons or other hazardous materials during construction of the proposed Project could also adversely affect surface waters. In order to minimize the potential for such effects, MEP would implement the measures specified in its Procedures regarding spill prevention, containment, and minimization near waterbodies. These measures include, but are not limited to:

- overall structuring of operations to reduce the risk of accidental spills or exposure of fuels or other hazardous materials into the environment;
- proper training of employees handling fuels and other hazardous materials;
- regular inspection of all equipment to ensure it is in good operating order;
- storage of hazardous materials and refueling of equipment at least 100 feet from any waterbody or in an upland area at least 100 feet from any wetland;
- general prohibition of concrete coating activities within 100 feet of a waterbody or wetland;
- provisions to have the necessary tools, equipment, and supplies on hand to contain and recover spilled materials at the job site; and
- prompt reporting of any spills to the appropriate agencies.

MEP would also implement an SPCC Plan to prevent and contain, if necessary, accidental spills of any material that may contaminate soils and surface waters, and to ensure that inadvertent spills of fuels, lubricants, or solvents are contained and cleaned up in an appropriate manner. MEP's SPCC Plan, is included as a component of the EMCP and describes the management of hazardous materials, such as fuels, lubricants, and coolants that would be used during construction. These measures include the overall structuring of operations to reduce the risk of accidental spills, proper training of employees, regular inspection of all equipment, preparation to contain and recover spilled materials, and storage of hazardous materials and refueling of equipment at least 100 feet from any waterbody. Given implementation of these measures, the risk of accidental spills or other introductions of hazardous materials to waterbodies would be effectively minimized.

3.3.2.3 Requested Modifications to the FERC Procedures

As described in Section 2.3, MEP's Procedures are consistent with the FERC guidance document of the same name (the FERC Procedures) with the exception of several proposed modifications. The FERC Procedures are available for review on the FERC Internet website at www.ferc.gov/industries/gas/enviro/guidelines. The applicable FERC Procedures sections and the associated modifications proposed by MEP are described in Table 3.3.2-4.

TABLE 3.3.2-4
Summary of Requested Modifications to the FERC Procedures

Applicable FERC Plan Section	Resource Issue	Explanation/Basis for Requested Modification
V.B.3	General Crossing Procedures	MEP proposes to cross dry intermittent or ephemeral streams using mainline (conventional, upland open-cut) construction techniques.
V.B.7 and V.B.8	Minor and Intermediate Waterbody Crossings	As site-specific conditions dictate, MEP proposes to temporarily string welded pipeline segments across minor and intermediate waterbodies to facilitate crossing of those features and minimize instream construction time.
VII.B.1	Hydrostatic Testing	MEP proposes to use Automated ultrasonic testing for the majority of the project in accordance to ASME B31.8.

Section I.B.1 of the FERC Procedures defines waterbodies to include any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and waterbodies must be crossed

using specialized construction techniques as specified by Section V of the FERC Procedures. Since non-flowing channels are not defined as "waterbodies," MEP's proposal to accomplish the crossing of dry intermittent or ephemeral channels using conventional, upland open-cut construction techniques is not viewed, in part, as a modification to the FERC Procedures. However, relative to the 24- and 48-hour time windows specified by our Procedures for completion of instream construction activities at minor and intermediate waterbodies, respectively, the construction techniques proposed by MEP would typically involve more extended periods of time between trenching, lowering-in, backfill, and restoration activities. Therefore, there would be the potential for stream flows to commence in previously dry intermittent or ephemeral channels between the initiation and completion of construction activities (e.g., as a result of rainfall). The channel in question would be regarded as a waterbody if stream flow commenced, and the crossing would be subject to all applicable requirements including the applicable time frames for completion of instream construction activities.

Regarding its proposal to temporarily string welded pipe segments across minor and intermediate waterbodies, MEP specified that it proposed this modification to facilitate the fabrication of HDD pull strings along the construction right-of-way or false right-of-way extra workspaces. MEP further specified that it pipeline segments would be installed in such a manner as to avoid disruption of the highest expected stream flow. As the FERC Procedures do not prohibit the stringing of pipeline segments across waterbodies, we do not perceive this request as a modification to the FERC Procedures given compliance with the general crossing procedures specified by Section V.B.3 of MEP's Procedures.

Section VII.B.1 of the FERC Procedures states that nondestructive testing of all pipeline section welds or hydrotesting of pipeline sections must be completed prior to installation under waterbodies or through wetlands. This measure is intended to ensure the integrity of pipeline segments prior to their installation and avoid the potential for expanded or extended construction impacts that could result if excavation and repair of a faulty pipeline segment were required. The FERC Procedures are performance based, and alternative measures that achieve the intent of our specified measures are not perceived as true modifications. MEP's proposal merely specifies the type of non-destructive testing (i.e., automated ultrasonic testing) that would be used to test pipeline welds. As all welds would still be subjected to non-destructive testing prior to installation of pipeline segments in waterbodies or wetlands, the intent of the performance based standard would still be achieved, and we therefore have no objection to MEP's proposal.

Section V.B.1 of the FERC Procedures requires written approval by appropriate state agencies to accomplish any instream construction activities in waterbodies supporting warmwater fisheries outside the time window extending from June 1 through November 30. Though MEP has not proposed a specific modification to our Procedures related to this guidance, pending the Commission approval of the Project, MEP's proposed construction schedule of August 2008 to February 2009 would partially extend outside this seasonal time window. In correspondence dated, October 17 and 31, 2007, Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) and TPWD-Inland Fisheries Division, respectively, stated that it did not object to MEP's proposal to perform waterbody crossings outside of the time window specified in our Procedures. On November 28, 2007, the Louisiana Department of Wildlife and Fisheries (LDWF) provided a variance to conduct stream work outside the June 1 through November 30 window. MEP also indicated that it had received written variances from the Oklahoma Department of Wildlife Conservation (ODWC) and the Alabama Department of Conservation and Natural Resources (ADCNR) regarding this modification to our Procedures.

3.3.2.4 Site-specific Impacts and Mitigation

Sensitive Waterbodies

There are no surface water intakes located within 3 miles downstream of the proposed Project waterbody crossings, but one state or locally designated surface water protection area would be traversed by the proposed Project. The SWAP area associated with the White Oak Creek Wildlife Management Area would be crossed at nine individual points between MP TX 82.4 and MP TX 93.1, but the White Oak Creek Wildlife Management Area itself would not be crossed. MEP consulted with TCEQ regarding the proposed crossing of the White Oak Creek SWAP, and TCEQ indicated that, while it designates surface water protection areas in Texas, any special permit requirements or construction mitigation measures for the area would be handled by the local water system or agency responsible for the property. The White Oak Creek Wildlife Management Area, which is located within the SWAP, is managed by the Texas Parks and Wildlife Department (TPWD) and owned by COE. As we recommended in the Draft EIS, MEP consulted further with the COE and Texarkana Water Utilities, which was identified by TCEQ as a local water system dependent upon waters from the White Oak Creek SWAP area. The results of these consultations indicated that Texarkana Water Utilities did not have any recommendations or special considerations for crossing the SWAP area, rather they were concerned about the proposed Project crossing their utility lines. MEP committed to further consultation with Texarkana Water Utilities and other associated water systems in order to identify existing utility lines prior to construction.

Eight waterbodies crossed nine times by the proposed Project are designated as public water supply: Red River (MP OK 8.2), Big Sandy Creek (MP TX 39.5), Black Bayou (MP TX 123.0), Red River (MP LA 12.8), Cypress Bayou (MP LA 24.4), Black Bayou (MP LA 44.2), Bayou D'Arbonne (MP LA 59.6), Ouachita River (MP LA 119.5), and Bayou De Siard (MP LA 123.2); however, no water supply intakes are within 3 miles downstream of the proposed Project route. Four of these crossings, (Red River (MP OK 8.2), Red River (MP LA 12.8), Ouachita River (MP LA 119.5), and Bayou DiSiard (MP LA 123.2), will be crossed via HDD. The remaining five waterbody crossings will be crossed via open cut methods. Given that none of the surface water intakes are within 3 miles of the proposed Project route, we do not anticipate any impacts on the quality of these surface water supplies.

There are no known contaminated sediments in the waterbodies that would be crossed by the proposed Project, and MEP proposes to cross 20 of the 35 impaired waterbodies identified in Table 3.3.2-3 using HDD methods. Use of the HDD method to cross these waterbodies would significantly minimize potential impacts to these resources, and MEP would implement its DDCP in the unlikely event that a HDD should fail or a frac-out occur. The remaining impaired waterbodies would be crossed via open-cut techniques. Though construction-related activities could potentially contribute to or further exacerbate the stated causes of impairment at each waterbody, such effects would generally be minor relative to the watershed scale factors (e.g., use of pesticides, poor agricultural or industrial practices, etc.) that resulted in the designation of impaired status. Additionally, construction-related disturbance at those stream crossings would be adequately minimized through implementation of MEP's Procedures, as discussed above.

The proposed crossings of streams designated as Louisiana Natural and Scenic Rivers (Dorcheat Bayou [MP LA 42.2], Bayou D'Arbonne [MP LA 106.6], and Bayou D'Loutre [MP LA 113.1]), as well as the proposed withdrawal of surface water from each of these sources, would require approval from LDWF. MEP has submitted a permit application to the LDWF for each of the proposed waterbody crossings, but these permit requests have not yet been approved. Additionally, MEP has consulted with the NPS regarding the proposed crossing of the NRI-listed Bayou D'Arbonne (MP LA 90.6 and MP LA 106.6; two separate crossings), Bayou D'Loutre (MP LA 113.1), Big Black River (MP MS 12.7), Chickasawhay River (MP MS 137.8), Pearl River (MP MS 44.8), and Strong River (MP MS 76.1), as

well as its plans for withdrawal of surface waters from those streams. However, the NPS has not yet formally responded. Because MEP has not yet completed all agency consultations or received all approvals regarding potential Project-related effects to designated Louisiana Natural and Scenic Rivers or NRI-listed streams, **we recommend that:**

- **MEP should consult with the LDWF regarding the proposed HDD crossing of, and surface water withdrawal from, designated Louisiana Natural and Scenic Rivers (Dorcheat Bayou [MP LA 42.1], Bayou D'Arbonne [MP LA 106.6], and Bayou D'Loutre [MP LA 113.1]) and file copies of all permits, approvals, or comments that may be obtained, including plans to address any additional mitigation measures recommended by LDWF, with the Secretary prior to construction at these crossings.**
- **MEP should consult with NPS regarding its proposed HDD crossing of, and hydrostatic test water withdrawal from, the NRI-listed Bayou D'Arbonne (MP LA 90.6 and MP LA 106.6; two separate crossings), Bayou D'Loutre (MP LA 113.1), Big Black River (MP MS 12.7), Chickasawhay River (MP MS 137.8), Pearl River (MP MS 44.8), and Strong River (MP MS 76.1), and file the results of those consultations, including plans to address any additional mitigation measures recommended by NPS, with the Secretary prior to construction at these crossings.**

Most of the waterbody crossings that contain threatened and endangered species would be crossed via HDD. There are 14 proposed waterbody crossings (the Red River would be crossed twice) that could contain threatened and endangered species or their habitats as listed in Table 3.3.2-3. Ten of these streams would be crossed by HDD, thereby preventing impacts to these species with a successful crossing and implementation of the DDCP, if required. However, four of these stream crossings are proposed to be crossed using open-cut methods: Piney Branch Creek (Bay Springs salamander), Tallahala Creek (Pearl darter), Steen Creek (Gulf sturgeon), and Souenlovie Creek (Gulf sturgeon, Pearl darter). Coulee Ditch was previously identified as potential habitat for protected mussel species. MEP has completed an aquatic survey of Coulee Ditch and no special-status mussels or other species were found. MEP's aquatic surveys for the other streams are ongoing. We note that potential impacts to Coulee Ditch would be avoided by use of a proposed HDD for the recently certificated Gulf Crossing Project (CP07-398). The Bay Springs salamander was previously known from Piney Branch Creek, but is now believed to be extirpated. In order to adequately protect these species and their habitats, **we recommend that:**

- **MEP should develop site-specific plans to cross Coulee Ditch (MP LA 134.2), Steen Creek (MP MS 47.3), Tallahala Creek (MP MS 115.6), and Souenlovie Creek (MP MS 134.6) in consultation with FWS and file these plans with the Director of OEP for review and written approval prior to construction at these crossings.**

Furthermore, the FWS also identified seven other streams that contain significant recreational fisheries: Bakers Creek, Dabbs Creek, Campbell Creek, Oakohay Creek, West Tallahala Creek, Buckatunna Creek, and Okatuppa Creek. We note that Dabbs Creek, West Tallahala Creek, Tallahala Creek, and Buckatunna Creek were all crossed via HDD by the Southeast Expansion Project (CP07-32), where construction is ongoing. Baker's Creek was crossed via HDD by the recently completed East Texas to Mississippi Expansion Project (CP06-446). MEP is currently conducting aquatic surveys and is consulting with FWS regarding the need to also cross these streams via HDD. Because MEP has proposed to cross these streams using open-cut methods, **we recommend that:**

- **MEP should develop site-specific plans to cross Bakers Creek (MP MS 19.4), Dabbs Creek (MP MS 63.2), Campbell Creek (MP MS 68.3), Oakohay Creek (MP MS 86.7),**

West Tallahala Creek (MP MS 98.1), Buckatunna Creek (MP MS 147.8), and Okatuppa Creek (MP AL 2.2) in consultation with FWS and file these plans with the Director of OEP for review and written approval prior to construction at these crossings.

Horizontal Directional Drill Crossings

MEP proposes to use 40 separate HDD crossings to accomplish pipeline installation across 33 perennial streams, five intermittent streams, and one pond. As described in Section 2.3.2, HDD is a trenchless crossing method that may be used to avoid direct impacts to sensitive resources, such as waterbodies by directionally drilling beneath them. A successful HDD would result in little or no impact to the waterbody being crossed.

The feasibility of each proposed HDD would be evaluated based on site-specific geotechnical data collected at each of the proposed HDD sites. The results of those geotechnical analyses would be provided to the FERC for our review prior to construction. In the event of HDD failure, MEP would attempt to re-drill the crossing in approximately the same location, as specified in its DDCP, which is included as a component of the EMCP. In the event re-drilling failed, MEP would accomplish pipeline installation across the waterbody in question using the open-cut construction method, but only after obtaining the necessary permits and approvals from the appropriate state and federal agencies. We do not believe that the HDD methods are likely to fail, however should the planned geotechnical analyses indicate that any proposed HDD crossing is not feasible or if HDD methods fail, **we recommend that:**

- **MEP should not begin an open-cut crossing of any of the waterbodies proposed to be crossed using HDD until it files an amended crossing plan with the Secretary for review and written approval by the Director of OEP. The amended crossing plan should include site-specific drawings identifying all areas that would be disturbed using the proposed alternate crossing method and the results of agency consultations including the COE, EPA, FWS, NPS, and other applicable federal and state agencies. MEP should file the amended crossing plan concurrent with the appropriate state and federal applications required for implementation of the plan.**

A successful HDD is considered a preferred method for crossing sensitive habitats because stream bottom disruption and subsequent impacts along that portion of the pipeline route would be eliminated or minimized. However, HDD methods are not without risk as inadvertent drilling fluid releases would result if the drilling fluid escapes containment at pits that would be excavated at the HDD entrance and exit points or if a “frac-out” occurs. A frac-out occurs when drilling fluids escape the drill bore hole and is forced through the subsurface substrate to the ground surface. During HDD operations, a frac-out could cause turbidity and sedimentation. Potential impacts from increased turbidity would include decreased water quality and compromised aquatic habitat integrity. As suspended materials settle out of the water column, sedimentation would partially or entirely cover the waterbody substrate and any sessile, benthic organisms.

The proposed HDD drilling fluid would consist of water and bentonite. Bentonite is a mixture of non-toxic clays and rock particles consisting of about 85 percent montmorillonite clay, 10 percent quartz and feldspars, and 5 percent accessory materials, such as calcite and gypsum. Though potentially toxic additives are added to drilling fluids used in some applications, MEP has stated that it would not use any synthetic or potentially toxic drilling fluid additives. Additionally, MEP has developed a DDCP, which is included as a component of the EMCP, that describes the procedures that would be implemented to monitor for, contain, and clean up any potential releases of drilling fluid during HDD operations. Measures included in the DDCP include, but are not limited to:

- continuous monitoring along the drill path, fluid return pits, and waterbody surfaces for evidence of a release;
- monitoring of drilling fluid pressures, volumes, and return rates;
- immediate cessation of drilling fluid pumping in the event of a complete loss of circulation of drilling fluid;
- containment of any escaped drilling fluid using tools, equipment, and supplies that are readily accessible;
- immediate clean-up of inadvertent releases and restoration as appropriate; and
- notification of the appropriate agencies, including the FERC, in the event of an inadvertent release.

Each of the proposed HDD waterbody crossings would be constructed in accordance with MEP's Procedures and the terms of any applicable federal or state permits that may be granted. Additionally, MEP would implement its DDCP to monitor for and address any inadvertent releases of drilling fluids. We believe that these factors combined with the additional mitigation measures recommended above would minimize the potential for adverse environmental impacts associated with the proposed HDD crossings.

Hydrostatic Testing

MEP would hydrostatically test the proposed pipeline after installation to ensure structural integrity in compliance with the DOT pipeline safety regulations identified in the 49 CFR Part 192 (see Section 2.3.1). Additionally, water would also be required to support construction operations at the proposed HDD locations. The proposed hydrostatic testing water sources for pipeline segments, withdrawal locations, and estimated volumes of water required are identified in Table 3.3.2-5. The proposed water sources include the NRI-listed and designated Louisiana Natural and Scenic Rivers described in Section 3.3.2.1. Although municipal water supplies could also be used as sources of test water for some prefabricated assemblies (such as valve settings and pig launcher and receiver barrels) at some aboveground facility sites, municipal water supplies would not be used as a source of test water for the proposed pipeline.

TABLE 3.3.2-5
Summary of Hydrostatic Test Water Requirements for the Proposed Midcontinent Express Pipeline Project

Project Component / Facility	Water Source and Discharge Location	Withdrawal Location (MP)	Approximate Volume (gallons)
30-inch Diameter Mainline Pipeline			
	Red River	OK 8.3	7,244,000
42-inch-Diameter Mainline Pipeline			
	Brushy Creek	TX 47.0	7,396,000
	Brushy Creek/Sulphur River	TX 47.0/ TX 50.4	4,995,000
	Sulphur River/Black Bayou	TX 50.4/ TX 123.0	20,087,000
	Black Bayou	LA 13.3	3,056,000
	Red River	TX 123.0	14,473,000

TABLE 3.3.2-5 (continued) Summary of Hydrostatic Test Water Requirements for the Proposed Midcontinent Express Pipeline Project			
Project Component / Facility	**Water Source and Discharge Location**	**Withdrawal Location (MP)**	**Approximate Volume (gallons)**
	Red River/Dorcheat Bayou	LA13.4/ LA 42.2	2,779,000
	Ouachita River	LA 119.5	28,749,000
	Ouachita River /Bayou de Siard	LA 119.5/ LA 123.2	601,000
	Little Bayou Boeuf	LA 130.6	2,563,000
	Bayou Lafourche/Mississippi River	LA 141.0/ LA 194.2	4,884,000
	Macon Bayou	LA 158.8	5,611,00
36-inch Diameter Mainline Pipeline			
	Macon Bayou/ Mothiglam Bayou	LA 158.8/ LA 173.6	4,017,000
	Mothiglam Bayou/ Mississippi River	LA 173.6/ LA194.2	5,771,000
	Mississippi River/ Big Black River	LA 194.2/ MS 12.7	3,519,000
	Big Black River/ Pearl River	MS 12.7/ MS 44.8	8,661,000
	Pearl River/ Strong River	MS 44.8/ MS 73.1	7,631,000
	Strong River/Leaf River	MS 73.1/ MS 97.0	6,464,000
	Leaf River/Tallahala Creek	MS 97.0/ MS 115.6	7,737,000
	Chickasawhay River	MS 137.8	9,811,000
16-inch Diameter CenterPoint Lateral Pipeline			
	Macon Bayou	CPL 3.5	217,000
HDD Crossings			
Red River HDD	Red River	OK 8.3	283,000
Bois D'Arc Creek HDD	Bois D'Arc Creek	TX 2.8	472,000
Archeological Site HDD	Bois D'Arc Creek	TX 2.8	135,000
Sanders Creek HDD	Sanders Creek	TX 9.4	189,000
Wetland/Brush Creek HDD	Commercial Source	TX 46.0	1,126,000
	Brushy Creek	TX 47.0	
	Farms Private Lake	TX 52.0	
Brushy Creek/Sulphur River HDD	Brushy Creek	TX 47.0	617,000
	Sulphur River	TX 50.4	
	Farms Private Lake	TX 52.0	
UT Brushy Creek/UT Sulphur River/Sulphur River (2) HDD	Sulphur River	TX 50.4	1,140,000
	Private Pond	TX 52.0	
White Oak Creek HDD	White Oak Creek	TX 59.8	429,000

TABLE 3.3.2-5 (continued) Summary of Hydrostatic Test Water Requirements for the Proposed Midcontinent Express Pipeline Project			
Project Component / Facility	**Water Source and Discharge Location**	**Withdrawal Location (MP)**	**Approximate Volume (gallons)**
Unnamed Ponds HDD	Unnamed Ponds	TX 114.6	429,000
Black Bayou HDD	TBD	TBD	TBD
Red River HDD	Red River	LA 13.3	992,000
Long Lake (Bodcau Bayou)/Wetland HDD	Bodcau Bayou Reservoir	LA 35.7	1,234,000
Dorcheat Bayou/Wetland HDD	Dorcheat Bayou	LA 42.2	536,000
Bayou D'Arbonne Lake/ Bayou D'Arbonne HDD	Bayou D'Arbonne	LA 90.6	644,000
Wetland/Bayou D'Arbonne HDD	Bayou D'Arbonne Private Pond	LA 106.6/ LA 108.0	1,019,000
Bayou D'Loutre HDD	Ouachita River	LA 119.5	617,000
River Rd/Ouachita River HDD	Ouachita River	LA 119.5	402,000
Highway 165 Sterlington Area HDD	Ouachita River Private Source	LA 119.5	644,000
Bayou de Siard (Presiaro Bayou)/Hwy 136/RR/Wetland HDD	Bayou de Siard	LA 123.2	1,341,000
Little Bayou Boeuf/Wham Brake/Wetland/RR/Hwy 134 HDD	Private Source	LA 130.9	724,000
Bayou Lafourche/Hwy 137 HDD	Bayou Lafourche	LA 141.0	429,000
Adcock Rd/Boeuf River HDD	Boeuf River Private Source	LA 143.9 LA 140.9	322,000
Wetland/Macon Bayou HDD	Macon Bayou	LA 158.8	416,000
Frazier Rd/Joe's Bayou/Hwy 577 HDD	Joe's Bayou	LA 158.8	240,000
WRP HDD	Macon Bayou	LA 158.8	580,000
Charles Brown Rd/Wetland/Tensas River HDD	Tensas River	LA 166.0	240,000
Mississippi River HDD	Mississippi River	LA 194.2	1,030,500
Hwy 61 HDD	Mississippi River	LA 194.2	500,000
Big Black River HDD	Big Black River	MS 12.7	500,000
UT Turkey Creek (2)/Turkey Creek/Natchez Trace Parkway HDD	Big Black River	MS 12.7	440,000
I-55 HDD	Big Black River	MS 12.7	240,000
Pearl River HDD	Pearl River	MS 44.8	260,000
Strong River HDD	Strong River	MS 73.1	240,000
Leaf River HDD	Strong River	MS 73.1	310,500

TABLE 3.3.2-5 (continued) Summary of Hydrostatic Test Water Requirements for the Proposed Midcontinent Express Pipeline Project			
Project Component / Facility	**Water Source and Discharge Location**	**Withdrawal Location (MP)**	**Approximate Volume (gallons)**
Chickasawhay River/Hwy 45/Hwy 18/RR HDD	Chickasawhay River	MS 137.8	400,000
Hwy 80/RR HDD	UT Macon Bayou	CPL 1.8	66,000
UT Macon Bayou/WRP HDD	Macon Bayou	CPL 1.8	227,000
WRP HDD	Macon Bayou	CPL 3.5	89,000
Macon Bayou HDD	Macon Bayou	CPL 3.5	60,000

Notes:
TBD = To be determined, HDD was recently added and additional field surveys are needed to determine hydrostatic test withdrawal location and volume.

Withdrawal of large amounts of water for hydrostatic testing of pipeline segments could affect or limit other uses of rivers and streams including water supply, recreation, and aquatic habitat, particularly during low flow and drought conditions, or if the withdrawal was large relative to overall flow. Other impacts could include increased water temperatures, reduced levels of dissolved oxygen, and entrainment of aquatic organisms. Similarly, discharge of hydrostatic test water would contribute to a change in water quality of receiving waters if the source water quality is different than the receiving water, especially during low flow or drought conditions when there is less water available in the receiving stream for dilution. Unregulated discharges could also result in erosion of upland areas or stream banks and increased sedimentation or turbidity in streams. Additionally, if chemical additives were used during hydrostatic testing, the discharge water would introduce contaminants into the receiving water.

MEP would avoid or adequately minimize potential impacts to waterbodies resulting from hydrostatic testing by implementing the measures identified in its Procedures and Hydrostatic Testing Plan, which is included as a component of the EMCP. These measures include, but are not limited to, the following measures:

- obtain and comply with all applicable water withdrawal permits and special-status stream permits;
- address the operation and fueling of any pumps located within 100 feet of waterbodies or wetlands in the proposed Project-specific SPCC Plan;
- maintain adequate flow rates in all source waterbodies to protect aquatic life and to provide for all downstream uses;
- screen all hydrostatic test water withdrawal intakes to prevent entrainment of fish and aquatic organisms; and
- regulate the discharge of hydrostatic test waters using energy dissipation devices to prevent erosion, scour, turbidity, or excessive streamflow.

MEP indicates that hydrostatic test water would either be discharged to upland areas using energy dissipation devices to minimize erosion or discharged directly to waterbodies to minimize the potential for overland erosion and sedimentation. Any water used for hydrostatic testing of pipelines that would be

point-source discharged into a waterbody would require a general NPDES permit administered by the states with EPA oversight. Additionally, MEP has indicated that hydrostatic test water contact would be limited to new pipe and that biocides and other potentially toxic hydrostatic test water additives would not be used during hydrostatic testing. MEP would also sample all test water to determine its suitability and implement treatment measures, if needed, prior to discharge.

MEP has consulted with state water resources agencies to determine if there any special low flow requirements that would regulate construction-related withdrawals of surface waters. The Oklahoma Water Resource Board and the TCEQ indicated that there are no general low flow requirements or regulations, but determination of whether withdrawals might impede other uses would be determined in association with temporary water use permits through each agency. In particular, the TCEQ indicated that it would review whether stream flows are sufficient to support the proposed withdrawals for those withdrawals that exceed 10 acre-feet, which would likely apply to the proposed withdrawals from the Red and Sulphur Rivers in Texas. The LDEQ did not identify any specific low flow requirements for water withdrawals, but MDEQ stated that it withdrawals would not be permitted below the established state minimum flow requirements, which are based on a 7Q10 standard (the lowest streamflow for 7 consecutive days that occurs on average once every 10 years). However, the regulations governing withdrawals in Mississippi allow for withdrawals that would generally return waters in close proximity to the source, provided that surface water quality standards are met. MEP indicates that it would discharge hydrostatic test waters to upland areas near the water source or directly to the waterbody from which it was withdrawn, and such an activity could qualify for this exception. Construction-related surface water withdrawals would be regulated by these agencies, and MEP would comply with the terms or conditions of any temporary water use permits that might be issued to it.

As noted above, MEP has initiated consultations with the LDWF and NPS regarding potential impacts, including those resulting from hydrostatic testing, to NRI-listed and designated Louisiana Natural and Scenic Rivers. We have also included recommendations that require MEP to consult with these agencies and address any additional agency recommended mitigation measures prior to construction. Given compliance with our Procedures, MEP's proposed measures, and our requirement to address any additional mitigation measures that may result from continuing agency consultations, we believe that impacts to waterbodies resulting from hydrostatic testing would be adequately minimized.

3.3.2.5 Conclusion Regarding Surface Water Resources

Construction of the proposed Project would impact surface waters at the proposed waterbody crossings, but potential impacts would be minimized or mitigated through implementation of the MEP's Procedures and other applicable components of its EMCP, which include measures for sediment and erosion control and minimizing the duration of instream construction. Most major or sensitive waterbodies, and all designated Natural and Scenic, NRI-listed, and navigable streams, would be crossed by HDD, thereby avoiding impacts with successful completion of the procedure. In the event of HDD failure or a frac-out, MEP would implement its DDCP to minimize and mitigate any unanticipated impacts. Additionally, the potential for impacts to water quality resulting from accidental spills would be minimized by implementation of MEP's SPCC Plan. Given these measures and our recommendations, we believe that potential impacts to surface water resources would be sufficiently minimized.

3.4 WETLANDS

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (Environmental Laboratory 1987). Wetlands perform a number of

valuable functions. Among these are flood flow attenuation, sediment retention, nutrient retention, provision of wildlife habitat, groundwater recharge and discharge, recreation, and erosion control.

Section 404 of the CWA of 1972 established standards to minimize impacts to wetlands under the regulatory jurisdiction of the COE. These standards require avoidance of wetlands where possible and minimization of disturbance where impacts are unavoidable, to the degree practical. Any unavoidable impacts may require compensatory mitigation. All wetland crossings would be subject to review and approval by the Tulsa, Ft. Worth, Vicksburg, and Mobile Districts of the COE; and MEP would comply with the conditions of the permits issued by the COE, including the provisions of any required wetland compensatory mitigation.

3.4.1 Existing Wetland Resources

MEP conducted an initial search of potential wetland areas along the proposed Project mainline and CenterPoint Lateral routes, at the proposed aboveground facility sites (compressor stations, meter stations, pig launcher/receiver sites, and mainline valves), and at all extra work areas (extra workspaces, access roads, and pipe storage and contractor yards) through review of available National Wetlands Inventory (NWI) maps and soil surveys. During the spring and summer of 2007, MEP conducted wetland field surveys to delineate wetland boundaries in accordance with the requirements of the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). Wetland boundaries were surveyed and the linear distance and acreage of impact to wetlands along the proposed Project were calculated by overlaying the proposed aboveground facility boundaries and construction work areas on the surveyed wetland boundaries. The COE is responsible for approving wetland delineations, but field verification of MEP wetland delineations has not yet been completed.

The location, wetland classification, crossing length, and affected acreage for each wetland that would be affected by construction and operation of the proposed Project is listed in Appendix F, and a summary of the wetland types affected by the proposed Project is provided in Table 3.4.1-1. The proposed sites for the aboveground facilities and pipe storage and contractor yards would not affect any wetlands, and therefore these facilities are not discussed further in this section. The majority of the 358 wetlands that would be affected by the proposed Project mainline facilities are located in Louisiana (approximately 51 percent of the total number), with the remainder occurring in Mississippi (28 percent), Texas (20 percent), Oklahoma (less than 1 percent) and Alabama (less than 1 percent). All of the 10 wetlands that would be crossed by the CenterPoint Lateral facilities are located in Louisiana.

The FWS wetland classification system described by Cowardin et al. (1979) was used to classify the wetlands that would be affected by the proposed Project. Virtually all of the 368 wetlands that would be crossed were identified as:

- palustrine forested (PFO);
- palustrine scrub-shrub (PSS);
- palustrine emergent (PEM); and
- combinations of these predominant types.

TABLE 3.4.1-1
Summary of Wetlands Crossed by the Proposed Midcontinent Express Pipeline Project

Wetland Type[a]	Number of Wetlands Crossed	Estimated Crossing Length (miles)	Construction Impacts (acres)[b]	Permanent Wetland Cover Type Conversion (acres)[c]
Mainline Facilities				
PFO	217	26.2	215.3	81.6
PSS	41	3.6	23.8	3.1
PEM	99	6.9	70.5	0.0
PEM/PSS	1	<0.1	0.2	<0.1
Total[d]	**358**	**36.8**	**309.7**	**84.8**
CenterPoint Lateral Facilities				
PFO	3	0.4	2.3	0.8
PSS	5	1.3	7.1	0.8
PEM	2	0.3	2.9	0.0
Total[d]	**10**	**2.0**	**12.2**	**1.7**
Combined Totals for Mainline and CenterPoint Lateral				
PFO	220	26.6	217.6	82.5
PSS	46	4.9	30.9	3.9
PEM	101	7.2	73.3	0.0
PEM/PSS	1	<0.1	0.2	<0.1
Total[d]	**368**	**38.8**	**321.9**	**86.4**

Notes:

[a] Wetland Type
PFO = Palustrine forested
PSS = Palustrine scrub-shrub
PEM = Palustrine emergent

[b] Wetland Construction Impacts account for avoidance/reductions of temporary and permanent construction and maintenance impacts due to the use of HDD methods that preclude disturbances of wetlands.

[c] Operational impacts for the pipeline facilities were based on a 10-foot-wide maintained (maintained as herbaceous) permanent right-of-way plus 10 feet of additional permanent right-of-way width on both sides (maintained as herbaceous or scrub-shrub), which equals a 30-foot-wide permanent right-of-way total width.

[d] Totals may differ slightly from data presented due to rounding.

Many wetland areas can be characterized as forested mixed with scrub-shrub or emergent wetlands, or emergent mixed with scrub-shrub wetlands, but for the purposes of mapping and impact evaluation for the proposed Project, wetlands are designated into the three major categories discussed above.

Palustrine Forested Wetlands

PFO wetlands are dominated by woody vegetation that is at least 20 feet tall (Cowardin et al. 1979), and these wetlands provide a diverse assemblage of vegetation and an abundance of food and water sources for wildlife. These areas often contain extensive bottomland hardwoods. Common tree species in the PFO wetlands observed within the proposed Project right-of-way for the mainline facilities include water oak (*Quercus nigra*), willow oak (*Q. phellos*), water tupelo (*Nyssa aquatica*), and sugarberry (*Celtis laevgata*). Forested wetlands that occur along the CenterPoint Lateral are similar to

those along the mainline route, except for the dominant woody species of hackberry (*Celtis laevigata*), honey-locust (*Gleditsia triacanthos*), and winged elm (*Ulmus alata*).

Palustrine Scrub-Shrub Wetlands

PSS wetlands include all wetlands dominated by woody vegetation less than 20 feet tall (Cowardin et al. 1979). PSS wetlands are typically not as structurally diverse as forested wetlands due to the lack of trees comprising a canopy. As in the PFO wetlands, PSS wetlands supply an abundance of food and cover resources for mammals and birds. Field surveys revealed that the dominant vegetation in these wetlands primarily include the same tree saplings and shrub species found in forested wetlands nearby. Common shrub species observed within the proposed Project mainline right-of-way include eastern baccharis (*Baccharis halimifolia*), buckthorn bumelia (*Bumelia lycioides*), and common buttonbush (*Ephalanthus occidentalis*), along with saplings of red maple, black willow, water oak, and sweet gum. Common rush (*Juncus effusus*), common reed (*Phragmites australis*), and number of other rushes are common in the herbaceous layer of wetlands in the proposed Project mainline right-of-way. Scrub-shrub wetlands that occur along the CenterPoint Lateral are comprised primarily of young, planted Nuttall oak (*Quercus nuttalli*) trees, with an emergent herbaceous layer of hairy swamp loosestrife (*Decodon verticillatus*), tall goldenrod (*Solidago altissima*), and trumpet creeper (*Campsis radicans*).

Palustrine Emergent Wetlands

PEM wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et al. 1979). Wildlife use these areas for nesting and feeding, and during migratory periods. Common herbaceous plants in the PEM wetlands traversed by the proposed Project mainline right-of-way are the same as many of the species found in scrub-shrub wetlands, but also include hop sedge (*Carex lupulina*), southern cattail (*Typha domingensis*), lizard's tail (*Saururus cernuus*), sensitive fern (*Onoclea sensibilus*), and several rush species. Common species found in the proposed CenterPoint Lateral right-of-way include hairy swamp loosestrife, tall goldenrod, and trumpet creeper.

3.4.1.1 High-quality, Sensitive, or Special-status Wetlands

MEP identified two types of special-status wetland areas that would be affected by construction of the proposed Project, including high-quality forested wetlands and lands in the NRCS'WRP.

High-Quality Forested Wetlands

Wetlands with significant high-quality forested communities occur along the proposed route. Bald cypress-tupelo swamps may contain other ecologically diverse plant species and provide habitat for a variety of wildlife, including migratory birds. These areas often contain mature and large specimen bald cypress and/or tupelo trees. MEP identified 17 high-quality and 24 medium-quality cypress-tupelo PFO wetlands that would be crossed by the proposed Project as listed in Table 3.4.1-2.

TABLE 3.4.1-2
High and Medium-quality Cypress-tupelo Forested Wetlands Occurring Along the Proposed Midcontinent Express Pipeline Project

Milepost	Approximate Distance Crossed (feet)	Forested Wetland Quality[a]	Construction Impacts (acres)	Permanent Wetland Cover Type Conversion[b] (acres)
TX 126.3	137.8	High	0.24	0.1
LA 2.0	2,308.1	High	4.0	1.6
LA 10.2	3,222.1	High	5.3	2.2
LA 42.2	1,332.5	High	2.5	0.9
LA 44.4	852.7	High	1.4	0.6
LA 62.5	3,214.0	Medium	7.4	2.2
LA 96.7	387.6	High	0.7	0.3
LA 104.7	418.4	Medium	0.7	0.3
LA 104.8	1,634.6	Medium	2.7	1.1
LA 105.6	128.2	Medium	0.2	0.1
LA 106.0	146.1	High	0.2	0.1
LA 106.4	3,379.7	High	0.0 [c]	0.0 [c]
LA 113.0	1,058.0	High	0.0 [c]	0.0 [c]
LA 113.3	284.8	High	0.0 [c]	0.0 [c]
LA 114.1	267.3	Medium	0.5	0.2
LA 115.2	227.7	Medium	0.3	0.1
LA 115.5	1,170.4	High	2.0	0.8
LA 116.3	205.3	High	0.3	0.1
LA 123.6	2,383.9	High	0.0 [c]	0.0 [c]
LA 138.0	1,796.3	Medium with Vernal Pool	2.6	1.2
LA 156.5	316.9	Medium	0.5	0.2
LA 156.6	169.6	Medium	0.3	0.1
LA 166.1	272.2	Medium	0.0 [c]	0.0 [c]
LA 169.9	735.6	Medium	6.2	0.5
MS 12.5	469.8	Medium	0.0 [c]	0.0 [c]
MS 12.9	2,519.3	High	2.5	1.6
MS 25.7	135.7	Medium	0.0 [c]	0.0 [c]
MS 44.7	426.0	High	0.0 [c]	0.0 [c]
MS 93.9	82.9	Medium	0.1	0.1
MS 107.5	905.8	Medium	1.6	0.6
MS 131.1	547.8	High	0.9	0.4

TABLE 3.4.1-2 (continued)
High and Medium-quality Cypress-tupelo Forested Wetlands Occurring Along the Proposed Midcontinent Express Pipeline Project

Milepost	Approximate Distance Crossed (feet)	Forested Wetland Quality[a]	Construction Impacts (acres)	Permanent Wetland Cover Type Conversion [b] (acres)
MS 137.7	136.2	Medium	0.0 [c]	0.0 [c]
MS 143.7	187.0	Medium	0.3	0.1
MS 144.6	88.0	Medium	0.1	0.1
MS 144.6	329.0	Medium	0.6	0.2
MS 144.8	2,810.8	High	4.8	1.9
MS 145.9	335.7	Medium	0.5	0.2
MS 146.4	218.7	Medium	0.3	0.1
MS 147.7	32.6	Medium	0.1	0.0
MS 147.7	362.3	Medium	0.9	0.2
Total[d]	**34,067 (6.4 miles)**	**-**	**48.7**	**17.4**

Notes:
[a] Habitat quality assessments for bald cypress-tupelo PFO wetlands were determined in the field by MEP.
[b] Involves conversion of high- or medium-quality PFO to PSS or PEM
[c] An impact value of 0.0 indicates that direct impacts would be avoided via HDD.
[d] Totals may not match data presented due to rounding.

Wetland Reserve Program Lands

The NRCS administers the WRP, which is a voluntary program that offers landowners the opportunity to protect, restore, and enhance wetlands located on their property (NRCS 2006d). The private owner retains title to the lands in the WRP, but the NRCS controls a protective easement over the properties. The program attempts to improve wetland function and wildlife habitat, and to promote long-term conservation through technical and financial assistance.

MEP identified five WRP lands managed by the NRCS that would be crossed by the proposed Project. The WRP crossing lengths range from 741 feet to 3,024 feet. Based on available mapping and coordination with the NRCS, MEP indicates that a total of approximately 1.4 miles of WRP lands would be crossed by the proposed pipeline route in Fannin County, Texas and in Bossier and Madison Parishes, Louisiana. The location, size, and characteristics of these WRP lands are discussed in more detail in Section 3.8.5.

3.4.2 General Impacts and Mitigation

Pipeline construction would result in both short- and long-term alterations of the vegetative cover in wetlands along the proposed construction right-of-way. In the short-term, construction activities have the potential to diminish the recreational and aesthetic value of wetlands through clearing, trenching, spoil placement, vehicle traffic, and related construction disturbances. Wetland functions such as erosion

control, buffering and flood flow attenuation, sediment retention, and nutrient retention would also be affected by construction. These effects would typically be greatest during and immediately following construction. Clearing of wetland vegetation would result in both short- and long-term loss of wetland wildlife habitat and some wetland functions, with the duration of the impact varying by habitat type. Due to the relatively long period required for PFO wetlands to regenerate, up to 30 years or more, impacts to these wetland types would be long-term. Impacts to PSS wetlands would be mostly short-term, as regeneration would likely occur within 2 to 4 years. PEM wetlands, which can regenerate more rapidly, would be typically affected only temporarily as they may become re-established in one or two growing seasons.

MEP's Procedures allow for annual maintenance of a 10-foot-wide strip centered over the pipeline. Additionally, trees that are within 15 feet of the pipeline and greater than 15 feet in height may be cut and removed. These activities would not affect PEM wetlands, as these herbaceous areas would not typically be maintained or mowed. However, mowing, clearing, and tree removal would affect PSS and PFO wetlands along the permanent right-of-way. Functions associated with these wetland types would be altered as forested or scrub-shrub wetlands within the maintained portion of the permanent pipeline right-of-way would be permanently converted to an herbaceous state. However, the overall acreage of wetlands would not be significantly reduced.

Excavation of the pipeline trench, installation of the pipe, and backfill of the trench would affect the rate and direction of water movement within wetlands. In addition, excavation activities would alter perched water tables by disturbing impermeable soil layers. This would adversely affect wetland hydrology and revegetation by creating soil conditions that might not support wetland communities and hydric vegetation at preconstruction levels. Failure to properly segregate soils during construction would result in mixed soil layers, which would alter biological components of the wetland and affect the reestablishment of native wetland vegetation. Temporary stockpiling of soil and the movement of heavy machinery across wetlands would also lead to inadvertent compaction and furrowing of soils, which would alter natural hydrologic patterns, inhibit seed germination, damage root systems, and increase seedling mortality. Altered surface drainage patterns, stormwater runoff, runoff from the trench, accidental spills, and discharge of hydrostatic test water would also negatively affect water quality by increasing the potential for siltation and turbidity resulting from construction activities.

Construction of the proposed Project's mainline facilities would affect 358 wetland areas resulting in a total of approximately 309.7 acres of wetland disturbance during construction. These impacts would include approximately 215.3 acres of PFO wetlands and an additional 94.4 acres of PEM, PSS, and PEM/PSS wetlands (see Appendix F). Construction of the CenterPoint Lateral facilities would affect 10 wetland areas resulting in a total of approximately 12.2 acres of wetland disturbance during construction. These impacts would include approximately 7.1 acres of PSS wetlands, 2.9 acres of PEM wetlands, and 2.3 acres of PFO wetlands. As described above, impacts to PEM and PSS wetlands would be temporary or short-term, as regeneration would occur rapidly in these areas. Further, maintenance of the permanent pipeline right-of-way would not result in a permanent conversion of PEM wetlands.

Approximately 82.5 acres of PFO wetlands would be permanently affected (converted to PSS or PEM wetlands) by maintenance of the permanent pipeline right-of-way for the Project mainline and CenterPoint Lateral (see Appendix F), and the remaining PFO wetland impacts would be long-term due to the slow regeneration time of forested areas. Thirteen of these forested wetland crossings, excluding the high and medium-quality cypress-tupelo communities that are discussed in Section 3.4.3, would exceed 2,000 feet in length.

The FWS recommended in a letter to the FERC dated September 13, 2007, that all major streams and rivers (including adjacent floodplains) be crossed using HDD methods. In letters dated May 24, 2007

and March 27, 2008, the TPWD also recommended HDD crossings for high-quality wetlands and evaluation of other measures to avoid or minimize associated impacts. The LDWF in its letter dated April 4, 2008 recommended that forested wetland crossings at multiple locations be evaluated further. We recommended in the Draft EIS that MEP consult further with state and federal agencies regarding proposed forested wetland crossings exceeding 2,000 feet in length and consider development of additional avoidance and minimization measures, such as incorporation of additional or extended HDDs or implementation of site-specific forested wetland crossing and restoration plans, as may be appropriate.

As recommended in the Draft EIS, MEP consulted with state and federal agencies regarding proposed crossings of extensive forested wetlands. A conference call and field visit to discuss and evaluate forested wetlands in Louisiana were also conducted in April 2008 with participation by agency representatives and the FERC. MEP has committed to cross the forested wetland areas at MP TX 51.4 and MP LA 90.3 by HDD in order to avoid or significantly reduce impacts. Based on our evaluation and the results of consultations, we conclude that MEP's proposed construction methods are acceptable at these other forested wetland locations:

- MP TX 50.4 – the location of the Sulphur River and Highway 37 prevent adequate space for a HDD pullback section, the proposed route is partially collocated with an existing corridor;
- MP TX 61.0 and 62.3 – the proposed route abuts an existing corridor;
- MP LA 10.9 – the area was disturbed by a recent clear-cut;
- MP LA 17.4 – the landowner prefers the route as proposed to enhance habitat for duck management;
- MP LA 136.8 – the area is previously disturbed;
- MP LA 142.7 – the area is fragmented by an existing powerline corridor;
- MP LA 146.7 - the proposed route abuts an existing corridor; and
- MP LA 176.6 – the proposed route would avoid impacts to an adjacent WRP to the south and more extensive forested wetlands to the north, the NRCS prefers complete avoidance of WRP sites and prefers avoidance of WRPs in lieu of HDD.

LDWF expressed continued concerns about proposed forested wetland crossings located at MP LA 96.7, MP LA 104.7, and MP LA 151.1 (and its associated bird nesting habitat). Additionally, the FWS recommended that MEP consider collocating the proposed route with an existing corridor at MP MS 14.2 along Belches Bayou instead of deviating north into a large forested wetland and/or the use of an HDD in this area. MEP has not yet completed consultation with FWS, LDWF, or MDWFP regarding these proposed crossings. Therefore, **we recommend that:**

- **MEP should develop site-specific plans to cross the forested wetlands at MP LA 96.7, MP LA 104.7, MP LA 151.1, and MP MS 14.2 prepared in consultation with the COE, FWS, LDWF, MDWFP, and other appropriate agencies. MEP should identify and evaluate appropriate avoidance and/or minimization measures (e.g., implementation of an HDD, route variation, and/or development of site-specific forested wetland crossing and restoration plans) to reduce impacts to these forested wetlands. MEP should file the site-specific crossing plans, along with the results of the consultations, with the Director of OEP for review and written approval prior to construction at these crossings.**

3.4.2.1 General Wetland Construction and Mitigation Procedures

For projects where wetland impacts are proposed, the COE requires that all appropriate and practicable actions be taken to avoid or minimize those impacts, pursuant to its Section 404(b)(1) guidelines, which restrict discharges of dredged or fill material where a less environmentally damaging and practicable alternative exists. All wetland crossings would be subject to review by the COE to ensure that wetland impacts are fully identified and appropriate wetland restoration and mitigation measures are implemented. MEP would also comply with all conditions of the Section 404 authorizations that may be issued by the COE. See Section 3.4.4 for additional discussion of compensatory mitigation requirements.

MEP has attempted to avoid or minimize impacts to wetlands through reductions in the nominal construction right-of-way width in wetlands to 75 and 60 feet for the mainline and CenterPoint Lateral pipeline facilities, respectively, selective routing and evaluation of route alternatives, and use of its Procedures. Additionally, MEP would be required to provide restoration and/or compensatory mitigation for wetland impacts in consultation with the COE (see Section 3.4.4). MEP adopted several route variations in order to avoid and minimize impacts to waterbodies and in some cases, associated wetlands (see Section 4.4). Additionally and to the extent practicable, MEP's proposed route would be collocated with or parallel existing pipeline or utility rights-of-way, thereby reducing impacts to previously undisturbed wetlands.

Section 2.3.2 describes the specialized pipeline construction procedures that MEP would implement to minimize impacts to wetlands. Within the construction right-of-way, MEP would leave existing root systems intact where possible, install erosion control devices to minimize sediment flow into the wetland, and use special seed mixes during restoration, as may be recommended by local agencies. MEP would also reduce the width of the maintained portion of the permanent pipeline right-of-way from the 50-foot or 60-foot width proposed for uplands to 30 feet in wetlands.

MEP would use the minimum construction equipment necessary within wetlands for clearing, trench excavation, pipe fabrication and installation, trench backfilling, and restoration activities. If standing water or saturated soil conditions were present, or if construction equipment caused ruts or mixing of the topsoil and subsoil, construction equipment operating in wetland areas would be further limited to the use of low-ground-pressure equipment or normal equipment operating from timber riprap or prefabricated equipment mats. MEP would also minimize impacts to wetlands by implementing the measures identified in its Procedures. These measures include, but are not limited to:

- clear marking of wetland boundaries and buffers in the field until construction is complete;
- limitation of tree stump removal and grading to the area directly over the pipeline, unless it was determined that safety related construction constraints required grading or the removal of tree stumps from under the working side of the construction right-of-way;
- stripping of topsoil from the area directly over the trench line to a maximum depth of 12 inches in unsaturated soils;
- minimization of the amount of time that topsoil is segregated and the trench is open;
- use of sediment barriers to prevent sediment flow into a wetland;
- de-watering of trenches in a way that does not cause sedimentation in a wetland;
- use of trench breakers to ensure maintenance of the original wetland hydrology;

- prohibition of the storage of hazardous materials and re-fueling within 100 feet of a wetland; and
- restoration of preconstruction contours, vegetative restoration, and monitoring.

3.4.2.2 Alternative Measures to the FERC Procedures

MEP requested modifications to our standard FERC Procedures that would impact wetlands. These requests include modifications to Sections VI.B.1.a (location of extra workspaces within 50 feet of wetlands). MEP has proposed to site 135 extra workspaces within wetlands and 134 extra workspaces within 50 feet of a delineated wetland boundary. Additionally, MEP has suggested that no access roads located within wetlands would require improvement. These areas and associated variance requests are identified in Appendix E-3.

The FERC's Procedures state that all extra work areas (such as staging areas and additional spoil storage areas) should be located at least 50 feet outside of identified wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. Many of MEP's proposed modifications in regard to extra workspace areas that would be located in wetlands are associated with HDD pull string assembly or HDD entrance/exit areas. Specifically, these extra workspace areas would facilitate HDD installations adopted to reduce overall impacts to waterbodies and associated riparian wetlands. See Section 2.3.2 for further discussion of the HDD installation technique. The remainder of MEP's proposed modifications are associated with extra workspace requirements for spoil storage at an open-cut waterbody crossing and extra workspace and staging areas that would be located within 50 feet of a wetland boundary, but not directly impact any wetland areas.

As described in Section 3.4.3, we view the identified impacts to PFO wetlands that would result from construction and operation of the proposed Project as potentially significant. We have not yet received supporting information for each of MEP's proposed modifications related to extra workspace areas that would be located within 50 feet of a delineated wetland boundary. Additionally, we have considered further avoidance and minimization of impact to the PFO wetlands that would be affected by the proposed modifications and determined that impacts to those wetlands would be sufficiently minimized with incorporation of our recommendations.

Based on our review, we have determined that the proposed modifications to our Procedures, including those that would affect PFO wetlands, appear reasonable and adequately justified. However, MEP's Procedures also require that MEP file a site-specific construction plan for each extra workspace that would not be located at least 50 feet outside of a wetland boundary, except in cases where adjacent land has been previously disturbed, and a site-specific explanation of the conditions would not support a 50-foot setback. MEP would be required to submit these site-specific construction plans to the Secretary for review and approval by the Director of OEP prior to construction.

MEP's Procedures require that the Director of OEP approve any access road improvements in wetlands. In addition, MEP would be required to complete all wetland permitting and compensatory mitigation consultations with the COE before commencing construction at any of the extra workspace areas or improving any access roads located within wetlands, as recommended above.

3.4.3 Site-specific Wetland Impacts and Mitigation

3.4.3.1 High Quality, Sensitive, or Special-Status Wetlands

As described above, MEP identified numerous high- and medium-quality cypress-tupelo PFO wetlands and five wetland areas included in the NRCS WRP program that would be affected by the proposed Project. Impacts to and mitigation for these areas are discussed below.

High-Quality Forested Wetlands

MEP identified 17 high-quality and 24 medium-quality cypress-tupelo PFO wetlands that would be crossed by the proposed Project as listed in Table 3.4.1-2. Of the 217.6 acres of forested wetlands disturbed by the Project, approximately 11 percent (or 24.9 acres) are considered high-quality cypress-tupelo wetlands. Ten high-quality cypress-tupelo forested wetlands with crossing lengths exceeding 1,000 feet would be affected by the proposed Project. Eleven percent (or 23.8 acres) of the PFO wetlands impacted by the Project are considered medium-quality cypress-tupelo wetlands. Approximately 10.6 acres and 6.8 acres of high-quality and medium-quality cypress-tupelo wetlands, respectively, would be permanently converted to PSS or PEM wetlands within the Project right-of-way.

As recommended in the Draft EIS, MEP consulted with state and federal agencies regarding proposed crossings of high quality cypress-tupelo forested wetlands. As noted above, a conference call and field visit to discuss and evaluate forested wetlands in Louisiana were also conducted in April 2008 with participation by agency representatives and the FERC. MEP has committed to cross the forested wetland areas at MP LA 42.2, MP LA 106.4, MP LA 113.1, and MP LA 123.6 by HDD in order to avoid or significantly reduce impacts. Based on our evaluation and the results of consultations, we conclude that MEP's proposed construction methods are acceptable at these other forested wetland locations:

- MP LA 2.5 – the western portion of this area was recently cleared by the landowner, the unaffected eastern portion of the wetland is of poor to medium quality;
- MP LA 10.2 – the area is disturbed by an adjacent clear-cut; and
- MP LA 62.9 and MP MS 12.8 – proposed route is collocated with an existing corridor; additionally, MEP would decrease construction impacts to the wetland at MS MP 12.8 by utilizing a "reverse lay" technique, and by utilizing an existing Entergy corridor for workspace reducing clearing to a width of 50 feet..

MEP has not yet completed agency consultations for two mature cypress-tupelo wetlands located at MP LA 115.5 and MP MS 144.8. Therefore, **we recommend that:**

- **MEP should develop site-specific plans to cross the mature cypress-tupelo forested wetlands at MP LA 115.5 and MP MS 144.8 prepared in consultation with the COE, FWS, LDWF, MDWFP, and other appropriate agencies. MEP should identify and evaluate appropriate avoidance and/or minimization measures (e.g., implementation of an HDD, route variation, and/or development of site-specific forested wetland crossing and restoration plans) to reduce impacts to these forested wetlands. MEP should file the site-specific crossing plans, along with the results of the consultations, with the Director of OEP for review and written approval prior to construction at these crossings.**

Wetlands Reserve Program Lands

MEP has identified five WRP properties that would be crossed by the proposed Project for a total distance of approximately 1.4 miles. As proposed, all five of these WRP tracts would be crossed using HDD, thereby eliminating direct surface impacts to hydric soils and vegetation. The NRCS has stated that complete avoidance of WRP lands, rather than HDD crossings, would be its preferred alternative. Depending on the location of HDD workspace areas and other factors, construction of the proposed Project could temporarily disturb hydric soils and affect wetland and non-wetland vegetation within the WRP easements crossed by the proposed Project route, and such effects would be similar to that described above. Due to the sensitive nature of WRP lands, MEP sought to avoid crossings of these lands through reroutes of the proposed Project alignment wherever possible (see Section 4.0).

Prior to construction, MEP would be required to obtain Warranty Easement Deed Subordination Agreements from the NRCS authorizing the crossing of any lands enrolled in the WRP. MEP continues to consult with NRCS regarding the proposed crossings, as well as considerations for alternative routing, construction methods, revegetation, and other impact minimization measures. Additionally, MEP has committed to implement other special construction and operational measures within a WRP special project area located in Madison and Richland Parishes, Louisiana, where the NRCS and FWS are working cooperatively to restore habitat for Louisiana black bear and create a habitat corridor through enrollment of additional lands in the WRP (see Section 3.7). Further consideration of potential Project-related effects to WRP lands is provided in our analysis of impacts to special interest areas in Section 3.8 of this EIS. In that section, we provide recommendations that MEP file copies of the Subordination Agreements for all affected WRP lands, as well as documentation of any NRCS-recommended measures to further minimize or mitigate impacts to WRP lands.

3.4.3.2 Conclusions Regarding Site-specific Wetland Impacts and Mitigation

Given compliance with MEP's Procedures, implementation of our recommendations for development of site-specific wetland crossing plans with agency consultation, evaluation of additional or extended HDDs or route variations to further reduce impacts to forested wetlands, for continued consultations with the NRCS regarding WRPs lands, and development of a compensatory wetland mitigation plan in consultation with the COE and other applicable resource agencies (see Section 3.4.4), we consider that impacts to high-quality PFO wetlands and WRPs would be sufficiently minimized.

3.4.4 Compensatory Wetland Mitigation

For temporary and short-term wetland impacts, MEP would revegetate wetlands in accordance with its Procedures. The requirements for wetland restoration measures identified in MEP's Procedures include:

- consultation with appropriate land management or state agencies to develop a Project-specific restoration plan that includes measures for re-establishing herbaceous and woody species;
- prohibition of the use of herbicides or pesticides within 100 feet of a wetland, except as allowed by the appropriate agencies; and
- monitoring of the success of wetland revegetation annually for the first 3 years after construction or until wetland revegetation is considered successful.

Revegetation would be considered successful if the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, a remedial

revegetation plan would be developed and implemented in consultation with a professional wetland ecologist. The remedial revegetation plan would serve as a guide to actively revegetate the wetland with native wetland herbaceous and woody plant species. Revegetation efforts would be continued until revegetation is successful.

As noted above, MEP would complete wetland permitting, including modifications of the proposed Project's scope and development of on-site mitigation and/or measures for off-site compensatory mitigation for all wetland impacts, in consultation with the COE. We also received comments from the LDWF, FWS, and EPA, indicating that they would like to be consulted regarding MEP's wetland mitigation plan. Based on the results of the consultations completed to date with the COE, MEP has proposed to compensate for wetland impacts through purchase of wetland mitigation bank credits in the area of the proposed Project. Mitigation banking is an approved alternative to on-site mitigation and often provides for greater likelihood of success in replacement of wetland function and long-term management of restored wetland areas. MEP and the COE are consulting regarding appropriate mitigation for wetland impacts, but because these consultations are not yet complete and have not involved all of the interested agencies, **we recommend that:**

- **Prior to construction, and in consultation with LDWF, FWS, and EPA, MEP should file with the Secretary its final COE-approved compensatory wetlands mitigation plan.**

3.5 VEGETATION

3.5.1 Existing Vegetation Resources

Based on review of maps, aerial photography, and the results of field surveys, MEP identified and described the vegetative cover types located along the proposed Project route. The upland vegetative resources crossed by the proposed pipeline route and located at the proposed aboveground facility sites are comprised of four primary types of vegetative communities: forest land, pine plantation, open land, and agricultural land. Several vegetative communities of special concern and areas of extensive forested tracts would also be crossed, as well as areas containing exotic and/or invasive plant species.

Upland forests include the mixed hardwood-loblolly pine association and the sloped, hardwood forest association. Pine plantations are actively planted, maintained, and managed for timber production. Open lands include maintained utility rights-of-way, upland shrub areas, and other non-agricultural herbaceous areas. Agricultural areas include locations used to grow field crops, as well as pasture lands that primarily support livestock. The upland vegetative cover types crossed by the proposed Project, as well as a listing of representative species, are described in Table 3.5.1-1. Vegetation occurring in wetland habitat types that would be crossed by the proposed Project is discussed below, but is analyzed in more detail in Section 3.4. The potential for Project-related effects to agricultural areas, as well as associated mitigation measures, are discussed in more detail in Sections 3.2 and 3.8.

Pipeline Facilities

Large areas of upland forest, open land, and agricultural vegetation cover types, and to a lesser extent, pine plantation lands, would be affected by construction of the proposed pipeline and associated extra workspaces. Of the upland vegetation communities crossed by the proposed Project mainline and CenterPoint Lateral, upland forest accounts for approximately 47 percent, open land accounts for approximately 26 percent, agricultural land accounts for approximately 17 percent, and pine plantation lands account for the remaining 9 percent.

TABLE 3.5.1-1
Upland Vegetation Cover Types Occurring Along the Proposed Midcontinent Express Pipeline Project

Vegetation Cover Type	General Description	Common Species
Upland Forest [a]	In mixed hardwood - loblolly pine (*Pinus taeda)* forests, loblolly pine comprises at least 20 percent of the overstory. These forests trend towards hardwood dominance when fire is suppressed.	In moist areas – sweetgum (*Liquidambar styraciflua*), American beech (*Fagus grandifolia*), yellow poplar (*Liriodendron tulipifera*), American elm (*Ulmus americana*), and various oaks. In drier areas protected from fire – winged elm (*Ulmus alata*), sassafras (*Sassafras albidum*), eastern hop-hornbeam (*Ostrya virginica*), southern red oak (*Quercus falcata*), blackjack oak (*Q. marilandica*), and black gum (*Nyssa sylvatica*).
Upland Forest [a]	Sloped hardwood forests occur on slopes of stream floodplains.	Overstory - American beech, white oak *(Q. alba*), water oak *(Q. nigra*), laurel oak *(Q. laurifolia*), black oak *(Q. velutina*), yellow poplar, sweetgum, mockernut hickory (*Carya tomentosa*), and pignut hickory (*Carya glabra*), and possibly loblolly pine. Midstory and understory - witch hazel (*Hamamelis virginiana*), american holly (*I. opaca*), flowering dogwood *(Cornus florida*), sweetleaf *(Symplocos tinctoria*), cherry-laurel (*Prunus caroliniana*), silky American (*Stewartia malacodendron*), downy service berry (*Amelanchier arborea*), ironwood (*Carpinus betulus*), eastern hop-hornbeam, American hornbeam (*Carpinus caroliniana*), and red coral bean (*Erythrina herbacea*). Herbaceous species - wake-robbins *(Trillium* spp.), smooth solomon's seal *(Polygonatum biflorum*), bellwort *(Uvularia perfoliatum*), violets (*Viola* spp.), Indian pink (*Spigelia marilandica*), Christmas fern (*Polystichum acrostichoides*), and broad beech-fern (*Phegopteris hexagonoptera*).
Pine Plantation	Pine plantations include varying age stands of loblolly pine that are planted, managed, and periodically cut for timber production.	Loblolly pine, with an understory of sweetgum, beautyberry (*Callicarpa americana*), yellow Jessamine (*Gelsemium sempervirens*), yaupon, greenbrier (*Smilax glauca*), and sawbriar (*Rubus argutus*).
Open Land [b]	Shrubby areas, such as utility rights-of way and other non-forested areas excluding agriculture and pastures.	Loblolly pine, sweetgum, and southern red oak saplings, winged sumac *(Rhus copallina*), beautyberry, yaupon, greenbrier, blackberries *(Rubus* spp.), bluestem (*Andropogon* spp.), and ragweed (*Ambrosia artemisiifolia*).
Open Land [b]	Herbaceous or grassy areas.	Crabgrass (*Digitaria* spp.), vasey's grass (*Paspalum urvillei*), smut grass (*Sporobolus indicus*), bluegrasses (Poa spp.), broomsedge (*Andropogon virginicus*), Bermuda grass (*Cynodon dactylon*), and bahia (*Bahia* spp.).
Agricultural [c]	Areas under active farming, including field crops and pastures.	Pasture – crabgrass, bluegrasses, broom-sedge, Bermuda grass, and bahia. Row and field crops – Rotated cropland and hayfields.

Notes:
[a] Includes the upland mixed hardwood-loblolly pine forest and sloped hardwood forest vegetative cover types.
[b] Includes the upland scrub-shrub vegetative cover type.
[c] Includes the herbaceous and pasture vegetative cover types.

In addition to the upland vegetation types discussed above, the proposed Project would also affect wetland vegetation. The wetland types traversed by the proposed Project route include forested wetlands (woody vegetation at least 20 feet tall with species such as water oak and bald cypress), scrub-shrub wetlands (shrubby vegetation including species such as button bush, hawthorne, and tree saplings), and emergent wetlands (herbaceous vegetation including species such as sedges and bulrush). Construction of the proposed Project pipeline facilities would affect approximately 217.6 acres of forested wetlands and an additional 104.3 acres of emergent and scrub-shrub wetlands along the proposed Project mainline and CenterPoint Lateral facilities. Operation of the proposed Project would permanently affect approximately 82.5 acres of forested wetlands, including medium and high-quality cypress/tupelo wetlands. However, in Section 3.4.3 we have included recommendations for additional agency consultations and development of site-specific wetland crossing plans and evaluation of additional or extended HDDs or route variations, which would further reduce construction and operational impacts to forested wetlands. Wetland vegetation resources, impacts, restoration, and mitigation are discussed in detail in Section 3.4, and the remainder of this section focuses on potential Project effects to upland vegetation resources.

Aboveground Facilities

The proposed Project aboveground facilities include four mainline and one booster compressor stations, 14 sites with metered interconnections to other pipelines, 33 mainline valves, and nine pig launcher/receiver facilities. Upland forest and pine plantation comprise the dominant existing vegetation cover types at the proposed Atlanta and Perryville Compressor Station sites, respectively. Agricultural land is the existing vegetative cover type at the proposed Lamar and Vicksburg Compressor Station sites. The vegetative cover at the proposed Delhi Booster Station site consists of agricultural land, and to a much lesser extent, forest land. Upland forest would also be the primary vegetative cover type at the proposed meter/regulator station sites, along with open land and agricultural lands to a lesser extent. Each of the 33 mainline valve sites would be located within the confines of proposed compressor stations, interconnect facilities, pig launcher/receiver facilities, or the permanent pipeline right-of-way and would not affect vegetation resources beyond that already accounted for at those facilities.

Access Roads

MEP proposes to principally use existing public roads and highways during construction of the proposed Project, although additional access points may require the use of private roads, drives, lanes, and other roads that would require modifications or improvements in order to support construction-related traffic (see Section 3.8). MEP proposes to use a total of 157 access roads for project construction and/or operation, 142 of these access roads would only be used temporarily for project construction. Minor improvements, such as widening or grading, would be required for 145 access roads, two access roads would be newly constructed, and 10 access roads would be used with no modifications. . The construction and improvements of access roads would affect approximately 399.5 acres of land. The vegetation type in the area of road widening would primarily consist of open lands, such as medians, road shoulders, and existing rights-of-way

Pipe Storage and Contractor Yards

As proposed, 29 temporary pipe storage and contractor yards would be used to support Project construction activities, and these yards would encumber approximately 465.2 acres of land. Land use at the proposed pipe storage and contractor yards would include open lands such as cleared fields or lots (39 percent), commercial lots (37 percent), and agricultural lands (9 percent).

3.5.1.1 Vegetative Communities of Special Concern or Value

Based on a review of maps, the results of field surveys, other available information, and consultations with resource agencies, MEP identified several areas or types of areas with an elevated level of vegetative significance that occur along the proposed Project. These areas include lands held in the Farm Services Agency's (FSA) Conservation Reserve Program (CRP), the NRCS Grassland Reserve Program (GRP), native prairie communities, several distinct forest communities, and an ecologically unique area located in Caddo Parish, Louisiana (the Service property), containing multiple rare vegetative species. Other specially managed areas that would be crossed by the proposed Project route include one wildlife management area (and the flowage easement for another wildlife management area). MEP also identified lands held in the NRCS-administered Wetlands Reserve Program (WRP), but these wetland communities of special concern are discussed further in Section 3.4. Endangered, threatened, and rare plant species are discussed further in Section 3.7.

Conservation Reserve Program

The FSA-administered CRP is a voluntary program that allows owners of agricultural land to conserve those lands through planting of grasses, trees, and other cover, with financial assistance from the federal government (USDA 2006). Typically, these areas retire erodible soils or otherwise sensitive croplands from production for a period of 10 to 15 years. To date, MEP has identified 41 CRP lands that would be crossed by the proposed pipeline route in Bryan County, Oklahoma; Lamar County, Texas; Caddo, Bossier, Webster, Lincoln, Union, Morehouse, Richland, and Madison Parishes, Louisiana; and Warren, Hinds, Rankin, Jasper, and Clarke Counties, Mississippi. MEP indicates that the total acreage of CRP lands encumbered by proposed construction work areas and the permanent pipeline right-of-way would not be available until completion of the easement negotiation process. CRP lands are discussed further in Section 3.8.

Grassland Reserve Program

The GRP is a program allowing landowners to conserve, protect, and restore grasslands on their property. The program involves the coordination of the NRCS, the FSA, and the U.S. Forest Service and aids landowners in protecting grasslands and preventing conversion of grasslands to cropland and other uses. Easement negotiations with landowners and identification of GRP lands are currently ongoing

Native Prairie Communities

The proposed Project route through Lamar County, Texas, would traverse near an area containing native prairie remnants, and several commentors, including the TPWD, identified native tallgrass prairies as a vegetative community of special concern during the scoping process for the proposed Project. Specifically, commentors identified Tridens Meadow, Smiley-Woodfin Meadow, and a third privately held prairie (Johnson Prairie) as unique vegetative resources where Project-related impacts should be avoided. These tallgrass prairies, which are dominated by Silveanus dropseed (*Sporobolus silveanus)* with lesser amounts of spike triodia (*Tridens strictus)*, occupy loamy, low pH upland soils classified as Alfisols in the northeastern Blackland Prairie Ecoregion of Texas.

Tridens Prairie, which has been managed by The Nature Conservancy (TNC) since 1972, consists of an approximately 100-acre parcel located in the southwest quadrant of the intersection of U.S. Highway 82 and State Highway 38 in Lamar County, Texas. At approximately 2,000 acres, the Smiley-Woodfin Meadow is the largest remnant prairie in Texas and is located on the north side of U.S. Highway 82, opposite Tridens Prairie. The Johnson Prairie, which is owned by a member of the Native Prairie Association of Texas (NPAT), consists of an approximately 28-acre area located near

MP TX 11.6. According to mapping information provided to MEP by TPWD, the Johnson Prairie, Smiley-Woodfin Meadow, and the Tridens Prairie would not be crossed by the proposed Project route.

Distinct Forest Communities

In its scoping comments, TPWD also identified two distinct forest communities that occur in the vicinity of the proposed Project route through Texas. These communities include the Post Oak-Blackjack Oak-Black Hickory (*Quercus stellata-Q. marilandica-Carya texana*) Vegetative Community and the Water Oak – Willow Oak Forest Vegetative Community. The TPWD identified an occurrence of a Texas State-designated vegetative community of special concern, the Post Oak-Blackjack Oak-Black Hickory Vegetative Community, which would occur near the proposed Project route in the vicinity of the Johnson Prairie in southern Lamar County, Texas (MP TX 11.5). However, mapping information provided by MEP indicates that the proposed Project route would not cross the Post Oak – Blackjack Oak – Black Hickory Vegetative Community. The proposed route would be contained entirely within an existing right-of-way at this location.

The TPWD recognizes the Water Oak – Willow Oak Vegetative Community as a unique vegetative community associated with bottomland hardwood forest that is considered to contain a biologically diverse variety of both plant and animal species. In addition to the dominant water oak and willow oak species, other plants found in this forest type include American beech, sweetgum, sycamore, hawthorn, and bush palmetto. The proposed Project would traverse an area of Water Oak – Willow Oak Vegetative Community between MP TX 60.8 and 63.5 in Titus County, Texas.

Service Sandy Woodlands Natural Area

MEP identified the Service Sandy Woodlands Natural Area (Service Property) located near MP LA 9.3 in Caddo Parish, Louisiana, as an area harboring a unique variety of rare plant species. The property contains a variety of rare herbaceous plant species such as reflexed trillium (*Trillium recurvatum*), eastern purple coneflower (*Echinacea purpurea*), and Riddell's spike-moss (*Selaginella arenicola* var. *ridellii*), as well as a rare hardwood tree species, shingle oak (*Quercus imbricaria*). The proposed Project would cross the Service Property at approximately MP LA 9.

Wenks Landing Seep

The LDWF identified Wenks Landing Seep as occurring in the immediate vicinity of the proposed Project. The Wenks Landing Seep is a natural wetland that exists adjacent to the proposed Project. The property occurs near LA MP 36.5, but would not be crossed by the proposed Project.

Wildlife Management Areas and EQIP Lands

The Bodcau WMA, located in Bossier and Webster Parishes, Louisiana, consists of a 34,355-acre site managed by the LDWF, in cooperation with the COE and a private corporation, primarily for the control of downstream flooding. The WMA contains a wide range of wildlife habitat ranging from cypress swamps to upland pine and hardwood forests interspersed with grasslands and open fields. Recreational use of this area includes hunting, fishing, boating, and camping. The proposed pipeline route would cross the Bodcau WMA between MP LA 35.0 and MP LA 36.6. The WMA would be crossed for approximately 6,080 feet (2,640 feet by HDD) by the proposed Project.

The proposed Project would also pass within 1,800 feet of the White Oak Creek WMA located near MP TX 82.5. Facility location maps for this area are found in Appendix B. Though no lands within the White Oak Creek WMA would be impacted by the Project, the proposed Project route would traverse

a property encumbered by a White Oak Creek WMA flowage easement. The White Oak Creek WMA consists of a 25,777 acre site in Titus, Morris, Bowie, and Cass Counties, Texas, that is owned by the COE and managed by TPWD for hunting, fishing, hiking, horseback riding, and wildlife viewing (TPWD 2007b). The proposed Project route would cross a portion of a "flowage easement" for the White Oak Creek WMA, but the crossing would be located at least 1,800 feet from the WMA boundary proper.

The Red'Arc Farm occurs near the proposed Project route in Lamar County, Texas, and the owners of this property have enrolled in multiple programs with federal agencies to conserve and enhance vegetative communities that provide valuable wildlife habitat. Specifically, approximately 18 acres of wetland habitat have been preserved for migrating waterfowl through a conservation agreement with the FWS. Additionally, the owners have completed an EQIP application, designed to improve the value of wildlife habitat and control erosion on the property. The EQIP program, which is administered by the NRCS, offers agricultural producers cost share assistance to implement on-farm conservation practices. Two re-routes have been implemented by MEP and as a result the Red'Arc Farm would not be crossed by the proposed Project.

3.5.1.2 Extensive Forested Tracts

Based on a review of maps, aerial photographs, and the results of field surveys, MEP identified several areas of large, relatively non-fragmented forested tracts that would be crossed by the proposed pipeline route. The location of these tracts and the length of the associated proposed Project crossings are identified in Table 3.5.1-2. Although these areas are relatively non-fragmented, MEP has indicated that many of these tracts are still subject to periodic harvest and/or thinning, thereby reducing their overall quality.

We also reviewed aerial photography of the proposed Project route to assess the nature and extent of large forested tracts. The DOI, in its comment letter dated April 23, 2008, requested additional analysis of proposed non-collocated rights-of-way in extensive forested tracts and an estimate of the acreage within these areas that would be impacted by construction and operation of the proposed Project. Based on our review, we estimate non-collocated crossing lengths of extensive forested tracts of approximately 0.5 mile in Texas, 19.4 miles in Louisiana, 25.8 miles in Mississippi, and 2.5 miles in Alabama. No extensive forested tracts were observed in Oklahoma. We estimate that the total length of non-collocated extensive forested tracts that would be crossed by the proposed Project is approximately 48.2 miles, somewhat less than the 77.0 miles estimated by MEP. Based on our analysis, it appears that some of the areas identified by MEP were cleared, located along habitat edges, near roads or other corridors, thinned by clearing, consisted of pine plantations, or were otherwise fragmented or disturbed.

We also estimated the area of extensive forested tracts that would be affected within these areas assuming a 100-foot-wide construction right-of-way and a 50-foot-wide permanent right of way. This is a conservative estimate, since some of the areas are forested wetlands and the construction and maintained permanent rights-of-way in those areas typically would be 75- and 30-feet-wide, respectively. The estimated area that would be affected during construction is approximately 6.0 acres in Texas (3.0 acres permanently), 235.2 acres in Louisiana (117.6 acres permanently), 312.7 acres in Mississippi (156.4 acres permanently), and 30.3 acres in Alabama (15.2 acres permanently). The total estimated area of extensive forested tracts that would be impacted by the proposed Project is 584.2 acres during construction and 292.1 acres during operation.

TABLE 3.5.1-2
Extensive Forested Tracts Crossed by the Proposed Midcontinent Express Pipeline Project

Location	Begin Milepost	End Milepost	Length (miles)
Lamar County, Texas			
	2.7	3.9	1.2
	46.3	46.8	0.5
Titus County, Texas			
	84.1	84.6	0.5
Cass County, Texas			
	117.5	118.4	0.9
	119.8	120.4	0.6
	121.2	122.2	1.0
	123.6	125.6	2.0
	125.8	126.6	0.8
Caddo Parish, Louisiana			
	0.0	0.9	0.9
	1.0	1.7	0.7
	1.8	3.6	1.8
	4.0	4.9	0.9
	5.3	6.9	1.6
	7.0	7.9	0.9
	8.1	9.4	1.3
	9.5	10.3	0.8
Bossier Parish, Louisiana			
	16.8	17.3	0.5
	17.4	20.8	3.4
	21.2	22.2	1.0
	22.4	27.9	5.5
	29.1	30.4	1.3
	35.1	36.7	1.6
Webster Parish, Louisiana			
	72.8	73.8	1.0
Lincoln Parish, Louisiana			
	79.7	80.2	0.5
Union Parish, Louisiana			
	104.4	109.6	5.2
	116.1	117.3	1.2
	117.4	118.9	1.5
Ouachita Parish, Louisiana			
	124.5	126.7	2.2
Madison Parish, Louisiana			
	176.5	177.0	0.5

TABLE 3.5.1-2 (continued) Extensive Forested Tracts Crossed by the Proposed Midcontinent Express Pipeline Project			
Location	**Begin Milepost**	**End Milepost**	**Length (miles)**
Warren County, Mississippi			
	1.3	3.0	1.7
Hinds County, Mississippi			
	29.5	30.5	1.0
	31.5	32.1	0.6
	33.2	34.5	1.3
	36.6	37.1	0.5
	40.7	41.2	0.5
	44.7	46.0	1.3
Rankin County, Mississippi			
	47.0	47.7	0.7
	53.2	54.2	1.0
	58.9	59.5	0.6
Smith County, Mississippi			
	88.3	89.3	1.0
Jasper County, Mississippi			
	107.3	108.6	1.3
	110.1	110.9	0.8
	115.5	116.0	0.5
	116.5	117.8	1.3
	120.7	121.2	0.5
	122.3	122.8	0.5
	122.9	124.6	1.7
	124.7	125.5	0.8
Clarke County, Mississippi			
	128.7	130.1	1.4
	130.2	131.3	0.9
	131.8	132.8	1.0
	133.9	134.6	0.7
	135.4	137.8	2.4
	138.2	139.7	1.5
	140.2	140.7	0.5
	141.4	142.2	0.8
	144.8	146.2	1.4
	146.4	147.0	0.6
	149.6	150.6	1.0
	152.7	153.7	1.0
	153.8	154.3	0.5

TABLE 3.5.1-2 (continued) Extensive Forested Tracts Crossed by the Proposed Midcontinent Express Pipeline Project			
Location	**Begin Milepost**	**End Milepost**	**Length (miles)**
Choctaw County, Alabama			
	0.0	0.5	0.5
	1.1	3.5	2.4
	4.7	5.7	1.0
Total			**77.0**

3.5.1.3 Exotic or Invasive Plant Species

During the scoping process for the Project, state and federal agencies identified several exotic plant species as potentially occurring within the Project area, including tree-of-heaven (*Ailanthus altissima*), cogon grass (*Imperata cylindrical*), Chinese tallow tree (*Sapium sebiferum*), Chinese privet (*Ligustrum sinese*), Japanese honeysuckle (*Lonicera japonica*), purple loosestrife (*Lythrum salicaria*), kudzu (*Pueraria lobata*) Johnson grass (*Sorghum halepense*), and Nepalese browntop (*Microstegium vimineum*). Other species of concern identified include alligatorweed (*Alternanthera philoxeroides*), giant salvinia (*Salvinia molesta*), hydrilla (*Hydrilla verticillata*), itch grass (*Rottboellia cochinchinensis*), musk thistle (*Carduus nutans*), tropical soda apple (*Solanum viarum*), and water hyacinth (*Eichornia crassipes*).

Tree-of-heaven is a fast growing deciduous tree, reaching heights of up to 80 feet tall (NPS 2006a). It can be found in urban areas, open fields, and along fencerows and forest edges. The EPA in its letter dated March 25, 2008, specifically identified tree-of-heaven as an invasive species threat that could thrive along wooded edges created by the proposed MEP project. The species produces numerous seeds and can sprout from stumps and root fragments. Tree-of-heaven can spread rapidly and produces toxins that may prevent the establishment of other plant species.

Cogon grass is a perennial grass that spreads through wind-blown seeds and forms dense infestations by branching underground rhizomes, which are a thick system of mat-forming roots that sprout new plants. Cogon grass competes with hardwood saplings for light, water, and nutrients and can grow so extensively that it decreases growth and increases mortality of young trees (Matlack 2002). Cogon grass can also spur wildfires that are more frequent and intense than would otherwise occur (NPS 2006a). The TPWD, NRCS, and Mississippi Natural Heritage Program (MSNHP) have all identified cogon grass as an invasive species of potential concern along the proposed Project route.

Chinese tallow tree is a fast growing deciduous tree, reaching heights up to 60 feet, that thrives in both wet and dry conditions and can displace native vegetation by successfully invading undisturbed forests (Invasive Species 2006). The TPWD and MSNHP identified Chinese tallow tree as an invasive species of potential concern along the proposed Project route.

Chinese privet is a semi-evergreen shrub with long leafy branches and trunks that commonly occur as multiple-stems reaching heights up to 30 feet. Dense thickets of privet commonly form in fields or in the understory of forests (Invasive Species 2007b). Birds and other animals are responsible for spreading the abundant seeds produced by these plants. Chinese privet was identified as an invasive species of concern by the TPWD and MSNHP.

Japanese honeysuckle, a semi-evergreen vine, is invasive within open or disturbed areas. Honeysuckle can twine around small saplings and form dense mats in trees, shading the understory (Invasive Species 2007f). Purple loosestrife is a perennial herb that invades both disturbed and undisturbed wetlands where it can out-compete native plant species (NPS 2006b). The TPWD identified both of these plants as invasive species of concern.

Kudzu is a deciduous vine that can climb trees to over 100 feet in height and prefers open habitats such as roadsides, rights-of-way, and old fields (Invasive Species 2007g). Kudzu smothers other plants, sometimes killing even trees. Johnson grass is a perennial grass that invades a variety of open habitats throughout the United States, including old fields, ditches, and wetlands (Invasive Species 2007h). Johnson grass spreads via rhizome, smothering other vegetation and can be toxic (producing prussic or hydrocyanic acid). Nepalese browntop, a delicate, annual grass that grows to 3 feet tall, typically inhabits open areas such as forest edges, fields, and trails (Invasive Species 2007j). Kudzu, Johnson grass and Nepalese browntop were identified by the MSNHP as invasive species of concern along the proposed Project.

Musk thistle is an herbaceous plant with red-purple flowers and spiny leaves, which can grow up to six feet in height. A native of Western Europe, the plant invades open lands throughout the United States (Invasive Species 2007i). Itch grass is an invasive annual grass with leaves covered in irritating hairs. It invades open and agricultural areas throughout the southeastern United States (Invasive Species 2007e). Musk thistle and itch grass were identified as invasive species of concern by the Oklahoma NRCS.

Tropical soda apple is a broad-leafed, shrubby forb that is known to invade pastures and fields (Invasive Species 2007k). Originally from South Africa, the prickly shrub was introduced to the United States in 1988 and can be a threat to crops and livestock. Water hyacinth is an invasive aquatic plant with blue-purple flowers that invades lakes, ponds and wetlands in the southern United States. Water hyacinth forms dense mats on water surfaces and can block sunlight from the aquatic environment (Invasive Species 2007l). Alligatorweed is an emergent invasive with white flowers, that can form floating mats on the surface of waterbodies, restricting oxygen and sunlight, as well as displacing native vegetation (Invasive Species 2007a). Giant Salvinia is an invasive aquatic fern that grows in clusters in still water, forming floating mats that can restrict oxygen and light (Invasive Species 2007c). Hydrilla is a rooted, submersed noxious weed that grows up through the water column to the water surface of shallow and deep freshwater systems (Invasive Species 2007d). Tropical soda apple, water hyacinth, alligatorweed giant salvinia and hydrilla have all been identified as invasive species of concern by the Mississippi NRCS.

3.5.2 General Impacts and Mitigation

The primary impacts of the proposed Project on vegetative cover types would be the clearing and removal of vegetation that occurs along the proposed route or aboveground facility sites during construction. The severity of impact would depend on the type of vegetation impacted, the size of the area cleared, the time required for vegetation to become re-established, and subsequent maintenance practices in cleared areas. Following construction, all areas not encumbered by the permanent pipeline right-of-way or associated aboveground facilities would be restored to preconstruction condition or allowed to revert to their former use and vegetative cover.

Most impacts to agricultural and open lands would be short term, as these areas would typically return to their herbaceous or shrub status within one to two years following construction, cleanup, and restoration. Areas planted with field crops are typically disturbed by periodic agricultural practices and would be replanted in the next growing season. It is also anticipated that pastures, rights-of-way, and

other herbaceous areas would revegetate quickly, given the abundant rainfall and long growing season of the general Project area.

Prior to the Draft EIS, the NRCS, TPWD, and ADCNR made recommendations regarding seed mixtures and revegetation practices. The TPWD recommended that disturbed areas along the proposed Project be planted with a mixture of native herbaceous species, especially where properties adjacent to the pipeline right-of-way contain native species of vegetation. Perennial grass species preferred by the TPWD for permanent cover include switchgrass *(Panicum virgatum),* sideoats grama *(Bouteloua curtipendula),* buffalograss *(Buchloe dactyloides),* eastem gamagrass *(Tripsacum dabtyloides), Virginia* wildrye *(Elymus virginicus),* Canada wildrye *(E. canadensis),* yellow indiangrass *(Sorghastrum nutans)* and/or little bluestem *(Schizachyrium scoparium)*. Where revegetation with native species is not feasible, the TPWD recommended the use of Bermuda grass *(Cynodon dactylon)* over bahiagrass *(Panium notatum)*, as bahiagrass is considered undesirable due to its invasive nature and lack of value to most wildlife. In addition, TPWD recommended allowing disturbed wetland areas to revegetate naturally. In its scoping comments, the ADCNR recommended seeding with a temporary vegetative cover of browntop millet (in the summer) and wheat (in the fall or winter) to quickly stabilize disturbed areas. The ADCNR also discouraged the use of exotic grass species, such as fescue (*Festuca* spp.), Bermuda, and bahiagrass, as permanent vegetative covers.

Where applicable, MEP has indicated that it would also follow the recommendations of the NRCS Critical Area Planting Specifications, as contained in the EMCP, where a landowner has not requested the use of a specific seed mix. The NRCS Critical Area Planting Specifications call for the use of species such as fescue, Bermuda, and bahiagrass as permanent vegetative covers, but was not entirely responsive to some agency recommendations received during the scoping process for the proposed Project. Therefore, MEP developed its Revegetation Plan which was finalized in consultation with the resource agencies as discussed above.

As stated in the Revegetation Plan, and finalized as a result of our recommendation in the Draft EIS, MEP would follow the Oklahoma NRCS recommendation to consult with landowners regarding seed mixes for replanting of the construction right-of-way. In addition, MEP would follow the ODWC recommendations for revegetating disturbed areas. The ODWC recommended seeding to restore native grassland using grasses, forbs, and legumes and MEP indicated that it would follow this guidance where native grasslands are present along the proposed route. In Louisiana, MEP would follow Louisiana NRCS and LDWF recommendations to seed with native species to restore areas of native vegetation disturbed during construction, seed improved pastures with vegetation reflecting the existing vegetative cover, and consult with landowners regarding revegetation of other agricultural lands. The LDWF recommended that MEP use native species for revegetation including species such as little bluestem, switchgrass, and pale coneflower (*Echinaca pallida*). The LDWF also recommended use of local seed sources where possible and if non-native species are not available, LDWF recommended using non-native species that are not persistent in the environment. In Mississippi, MEP would follow the MDWFP-recommended Mississippi NRCS guidance Establishing Grasses and Legumes on Critical Areas, and would determine seed mixtures based on landowner requirements and season constraints. In Mississippi, these could include native species such as swichgrass, lark selection partridge pea (*Chamaecrista fasciculata)*, and black-eyed susan (*Rudbeckia hirta*).

In addition, MEP's Plan requires that all upland areas disturbed by construction be fertilized, limed, and seeded in accordance with the prescribed dates and seed mixes specified by local soil conservation authorities or land management agencies. MEP's Revegetation Plan has been finalized in coordination with the relevant agencies in order to ensure that all appropriate, and agency recommended, vegetative restoration practices would be implemented during restoration activities.

The cutting or removal of vegetation during construction could lead to increased soil erosion, associated sedimentation and turbidity in streams and wetlands, an increase in invasive or exotic plant species, and a reduction in wildlife habitat. Clearing and construction activities along the proposed pipeline right-of-way and associated facilities could also result in soil compaction. Additionally, heavy machinery could damage riparian vegetation associated with waterbodies, whether the equipment is moving or parked for extended periods.

Impacts to forested areas, including pine plantations, mixed hardwood-loblolly pine forests, and sloped hardwood forests, would be long-term as re-growth to preconstruction conditions would take up to 50 years. These impacts would also involve the most significant change in vegetative strata, appearance, and habitat, as mature trees would be replaced for a period of years by herbaceous plants, shrubby growth, or saplings. Maintenance of the permanent pipeline right-of-way would prevent restoration of forested habitat, as the area would be mowed or otherwise maintained every three years, and a 10-foot corridor over the pipeline centerline would be maintained annually in an herbaceous state. In general, the proposed permanent pipeline right-of-way would be 50-feet-wide, but MEP proposes to maintain a 60-foot-wide permanent right-of-way along approximately 69.2 miles (13.7 percent) of the proposed 42-inch-diameter pipeline facilities. However, we have included a recommendation in Section 2.2 that would limit the permanent pipeline right-of-way width that MEP may acquire through the condemnation process, if necessary, to 50 feet. Clearing and construction activities along the pipeline right-of-way would also result in soil compaction and damage to the trunks, branches, or roots of adjacent trees left standing, thereby reducing their overall health and long term survival. However, MEP has committed to implementing its Plan, which includes measures for testing and mitigating soil compaction. Additionally, MEP would protect trees located outside the right-of-way from mechanical injury by felling trees and brush towards the construction right-of-way and by taking care to prevent or minimize injury to limbs and roots of adjacent trees.

To minimize construction related effects, MEP would implement its Plan, which is based largely on the FERC Plan with modifications as discussed in Section 3.2. The intent of MEP's Plan is to identify baseline mitigation measures for minimizing erosion and enhancing revegetation in upland areas. Implementation of MEP's Plan would aid vegetative restoration and prevent or minimize sedimentation and turbidity in streams and wetlands. The major aspects of MEP's Plan are described further in Section 3.2, and some of the restoration and best management practices identified in the Plan include the following:

- use of at least one environmental inspector per construction spread, who would ensure compliance with the Plan, Procedures, and other required conditions;
- segregation of topsoil;
- installation of temporary erosion control measures such as slope breakers, sediment barriers, and mulch;
- commencement of cleanup immediately after backfilling, and completion of restoration within 20 days;
- installation of permanent erosion control devices, such as trench breakers, and slope breakers;
- testing and mitigation for soil compaction;
- revegetation in accordance with the recommendations of the local soil conservation authority, other land management agencies, or the affected landowner;
- provision of barriers to control off-road vehicle activities; and
- post-construction monitoring and maintenance of revegetated areas.

3.5.3 Site-specific Impacts and Mitigation

Impacts to vegetative cover types would occur in those areas affected by pipeline and aboveground facility construction. The anticipated impacts to vegetation types are listed and enumerated in Table 3.5.3-1. As discussed above, some of the impacts associated with pipeline construction would also affect specially designated vegetation types or conservation programs.

TABLE 3.5.3-1
Upland Vegetation Cover Types Affected by the Proposed Midcontinent Express Pipeline Project

	Pipeline Facilities[a]		Aboveground Facilities[b]	
Vegetation Cover Type	**Temporary Construction Impact (acres)**	**Permanent Operations Impact (acres)**	**Temporary Construction Impact (acres)**	**Permanent Operations Impact (acres)**
Agricultural[c]	1,252.5	483.8	45.4	42.3
Upland Forest[d]	3,345.9	1,446.7	21.8	13.2
Open Land[e]	1,992.0	809.8	2.4	0.6
Pine Plantation[f]	652.8	285.3	18.7	14.4
Total	**7,243.2**	**3,025.6**	**88.3**	**70.5**

Notes:

[a] Acreage reflects a proposed nominal 100-foot-wide construction right-of-way through uplands for the 30-, 36-, and 42-inch-diameter sections, respectively, and a 75-foot-wide construction right-of-way through wetlands for the mainline pipeline and a nominal 75-foot-wide construction right-of-way through uplands and a 60-foot-wide construction right-of-way through wetlands for the CenterPoint Lateral pipeline. The acreage also reflects additional temporary workspaces.

[b] All of the area impacted during construction of the proposed aboveground facility sites would be permanently affected during operations.

[c] Includes pastures, active cropland, and hayfields.

[d] Includes upland mixed hardwood-loblolly pine forest and sloped hardwood forest.

[e] Includes maintained utility rights-of-way, non-agricultural herbaceous areas, and upland scrub-shrub areas.

[f] Includes actively planted and harvested pine plantation forests.

Pipeline Facilities

MEP's proposed pipeline construction right-of-way and extra workspaces would affect approximately 7,243.2 acres of upland vegetation during construction (Table 3.5.3-1). Approximately 55 percent of the vegetation resources affected during construction would consist of upland forest and pine plantation, with agricultural and open lands making up the remainder. As discussed above, agricultural lands and open lands would typically be revegetated within one or two growing seasons, but impacts to upland forest within the temporary construction right-of-way would be long-term, taking up to 50 years or more to recover. Impacts to forested areas would also represent a more substantial change in vegetative strata.

Pine plantations and upland forest would also be permanently impacted by operation and maintenance of the permanent pipeline right-of-way. These impacts would represent a marked, permanent change from forested vegetation to herbaceous or shrubby vegetation. Though agricultural and open lands would also occur within the permanent pipeline right-of-way, the vegetative strata in those areas would not be significantly altered during operations relative to the preconstruction condition.

MEP would minimize impacts to upland vegetation resources through implementation of its Plan, as described in Section 3.5.2. MEP would also mitigate impacts to vegetation resources through avoidance and minimization. MEP has proposed a nominal construction right-of-way width of 100 to 125 feet along upland sections of the proposed mainline pipeline that would be installed using conventional, open-cut trenching techniques (see Section 2.3.1). However, we included a recommendation in the Draft EIS that MEP reduce the nominal construction right-of-way width along all sections of the proposed Project mainline to 100 feet in width and they have filed revised alignment sheets reflecting this change. The typical construction right-of-way width for the CenterPoint Lateral would be 75 feet. In wetland areas, the typical construction right-of-way width would be reduced to 75 and 60 feet for the mainline and CenterPoint Lateral pipeline facilities, respectively, unless site-specific variances were issued. Additionally and as described in Section 2.2, the proposed Project mainline would be collocated with existing pipeline and utility rights-of-way for approximately 265 miles (approximately 53 percent) of its length, and the proposed Project construction right-of-way would overlap existing rights-of-way by 10 to 20 feet along about 147.2 miles of that length. About 3.1 miles (approximately 73.8 percent) of the CenterPoint Lateral would also be collocated with existing rights-of-way.

As described in Sections 2.3.2 and 3.3, MEP proposes to use HDD to accomplish pipeline installation across 39 individual waterbodies, including the Mississippi River and additional major waterbodies, three Louisiana Natural and Scenic Rivers, and six NRI-listed streams. In Section 3.3 and 3.4 we included recommendations for MEP to develop site-specific crossing plans for other streams and wetland areas, in consultation with state and federal agencies, which could result in additional areas being crossed by HDD. Where implemented, the use of HDD would minimize impacts to riparian vegetation at waterbody crossings. In addition, various wetlands, roadways, railroads, and special use areas, including WRP lands and the Natchez Trace Parkway (MP MS 26.0) would also be crossed via HDD, as described in Table 2.3-1.

Aboveground Facilities

Permanent impacts to vegetation resources would also occur at the proposed aboveground facility sites. Construction of the Atlanta Compressor Station, the Delhi Booster Compressor Station, and five of the 14 proposed meter stations would permanently impact about 13.2 acres of upland forest vegetation. Additionally, construction of the Perryville Compressor Station and two interconnects would permanently affect 14.4 acres of pine plantation. Construction of the Lamar and Vicksburg Compressor Stations, the Delhi Booster Station, and the ANR Interconnect would also permanently affect and alter about 42.3 acres of agricultural vegetation. Additionally, construction of the Enogex, CGT meter station, and CGT Interconnects would permanently affect about 0.6 acres of open land vegetation. All disturbed areas associated with the aboveground facilities that would not contain infrastructure such as buildings and other enclosures would be finish-graded and seeded or covered with gravel, as appropriate. All roads and parking areas would be graveled. Thus, construction of the aboveground facility sites would result in the permanent conversion of some vegetated areas to a potentially non-vegetated industrial/commercial use.

Access Roads

MEP proposes to use a total of 157 access roads for project construction and/or operation, 142 of these access roads would only be used temporarily for project construction. Minor improvements, such as widening or grading, would be required for 145 access roads, two access roads would be newly constructed, and 10 access roads would be used with no modifications. The construction and improvements of access roads would affect approximately 399.5 acres of land. Although access road improvements could include trimming of overhead vegetation and minor widening of roads, it is not anticipated that such improvements would result in significant effects to vegetated areas. Further, all

temporary access roads would revert to their preconstruction uses following construction. Impacts to vegetation resources associated with permanent access roads at the proposed compressor station sites are already accounted for in the land requirements reported for those facilities.

Pipe Storage and Contractor Yards

As proposed, 29 temporary pipe storage and contractor yards would be used to support Project construction activities, and these yards would encumber approximately 465.2 acres of land. Land use and vegetative cover at the proposed pipe storage and contractor yards includes open lands such as cleared fields or lots (approximately 39 percent) and agricultural lands (approximately 9 percent). The remaining area (approximately 37 percent) consists of commercial or industrial lots. Though land use associated with some of the contractor yards includes open land and agricultural vegetation, these facilities would not affect any unique or sensitive vegetative resources. Additionally, no areas would be permanently impacted as the pipe storage and contractor yard sites would be allowed to return to their original vegetative condition following construction. Further, most of these properties would require minimum improvements, and three of these proposed yards consist of vacant commercial lots in Lauderdale County, Mississippi, that would be used without any improvements. Should MEP identify the need for additional pipe storage or contractor yards not located in previously disturbed commercial or industrial areas, then MEP would perform appropriate environmental surveys and forward that information to the FERC for review and approval prior to their use.

3.5.3.1 Vegetation Communities of Special Concern or Value

Construction and operation of the proposed Project could affect several special-status vegetative communities or areas enrolled in vegetation restoration or enhancement programs. The potential Project-related impacts and associated site-specific mitigation, as applicable, are discussed below.

Conservation Reserve Program

MEP indicated that CRP lands would be crossed by the proposed pipeline route in Oklahoma, Texas, Louisiana, and Mississippi. MEP indicates that the total acreage of CRP lands encumbered by proposed construction work areas and the permanent pipeline right-of-way would not be available until completion of the easement negotiation process. MEP has consulted with FSA to determine the requirements for crossing and restoration of CRP lands. Upon disturbance caused by construction of the proposed Project, landowners would no longer be eligible to participate in the program or to receive the payments that they currently obtain from FSA. Impacts and mitigation to vegetative resources on CRP lands would generally be similar to descriptions in Sections 3.5.2 and 3.5.3 and would depend on whether the site was forested or not. Further consideration of potential Project-related effects to CRP lands is provided in our analysis of impacts to special interest areas, which is included in Section 3.8.

Grassland Reserve Program

MEP is in the process of identifying lands enrolled in the GRP and negotiation of landowner easements are ongoing. MEP would obtain any required authorizations for crossing GRP lands prior to construction.

Prairie Communities

Although the regeneration of grassland species is expected to occur within one to two growing seasons at disturbed areas following construction, the proposed Project could adversely impact native tallgrass prairie vegetative resources through disruption of the soil structure, abandonment of prescribed

burning, limiting species diversity, and introduction of invasive species. However, based on consultations with the TNC, review of aerial alignment sheets, and the results of field surveys, the proposed Project route would avoid crossing tallgrass prairie resources at Tridens Meadow and the Smiley-Woodfin Meadow.

At the request of the TPWD and the affected landowner, several route variations were also identified and considered to avoid and minimize Project impacts to the Johnson Prairie and an adjacent occurrence of the Post Oak-Blackjack Oak-Black Hickory Vegetative Community. These route variations are described and analyzed in Section 4.4. Although, one of the route variations considered would impact an area of native tallgrass prairie, the proposed route (including extra workspaces) adopted by MEP would collocate with an existing natural gas pipeline right-of-way to avoid and eliminate that impact. Therefore, no impacts to native tallgrass prairies are anticipated in association with construction and operation of the proposed Project.

Distinct Forest Communities

According to information provided by the TPWD regarding sensitive vegetation along the Project route, the proposed Project including extra workspaces, would not impact sensitive vegetation within the Post Oak – Blackjack Oak – Black Hickory Vegetative Community. This area would be crossed within an existing right-of-way, resulting in no tree clearing and no impact to the community. Therefore, no impacts to this forest community are anticipated in association with construction and operation the proposed Project.

The proposed Project would cross an area of the TPWD designated Water Oak – Willow Oak Vegetative Community from MP TX 60.8 to MP TX 63.5. Potential Project-related impacts that could occur to that vegetative community include removal of trees, habitat fragmentation, and soil erosion. Approximately 12.1 acres of the Water Oak – Willow Oak Vegetative Community would be impacted during construction of the proposed Project, and impacts to mature trees within the temporary construction right-of-way and extra workspaces would be long term, taking up to 50 years for the trees to became re-established. Operation of the proposed Project would completely prevent the re-establishment of trees within the permanent pipeline right-of-way, which would typically be 50-feet-wide. However, the proposed Project route would collocate with an existing pipeline right-of-way for the entire length of the proposed crossing of the Water Oak – Willow Oak Vegetative Community, thereby limiting effects to previously undisturbed areas and preventing the potential for further habitat fragmentation. Further, implementation of MEP's Plan and Procedures would effectively minimize soil erosion in the area.

We recommended adoption of a route variation in the Draft EIS for the Gulf Crossing Project (Docket Nos. CP07-398-001 and CP07-401-000) to completely avoid impacts to the same occurrence of the Water Oak – Willow Oak Vegetative Community that would be traversed by the proposed Project. Additionally, we recommended that if Gulf Crossing determined that the recommended route variation was not preferable to the originally proposed route, then Gulf Crossing should explain their technical or environmental justifications and reasoning. As we recommended in the Draft EIS for this proposed Project, MEP consulted further with TPWD regarding impacts to the Water Oak – Willow Oak Vegetative Community. MEP proposed to TPWD in March 2008 to purchase one credit at a conservation bank acceptable to the TPWD since approximately one acre of the mature upland Water Oak – Willow Oak Vegetative Community would be permanently impacted by the proposed Project. The TPWD concurred with this proposal as mitigation to offset the permanent impact to the upland Water Oak – Willow Oak Vegetative Community. Impacts to wetland Water Oak – Willow Oak Vegetative Community would be mitigated through the COE wetland permitting process. Based on MEP's consultations with TPWD and the resulting proposed mitigation, and because the proposed route would

be collocated with an existing corridor through a previously disturbed area, we believe that impacts to the Water Oak – Willow Oak Vegetative Community would be adequately minimized and mitigated.

Service Sandy Woodlands Natural Area

As discussed previously, the Service Sandy Woodlands Natural Area in Caddo Parish, Louisiana, contains a variety of rare plant species, and MEP has developed construction mitigation plans to minimize Project-related impacts to these sensitive vegetative resources. The proposed Project route would cross the Service Property near MP LA 9.3, affecting approximately 1.5 acres of sensitive vegetation. During consultation, LDWF informed MEP that no special measures for crossing the Sandy Woodlands Natural Area would be required.

Wenks Landing Seep

The LDWF has identified Wenks Landing Seep as a natural wetland community of concern, occurring immediately adjacent to the proposed Project. The property occurs near LA MP 36.5, but would not be crossed by the proposed Project and no impacts would occur.

Wildlife Management Areas and EQIP Lands

As described previously, the proposed Project would not cross or affect vegetation resources within the White Oak Creek WMA**.** MEP indicated that based on its consultations with TPWD, no special permit requirements or constraints on construction would be required. The proposed pipeline route would traverse the Bodcau WMA between MP LA 35.0 and MP LA 36.6 in Bossier and Webster Parishes, Louisiana. However, surface impacts to the majority of that distance would be avoided as MEP proposes to implement an HDD to cross a portion of the WMA and the adjacent Bodcau Bayou. The WMA would be crossed for approximately 6,800 feet (2,640 feet by HDD) and the proposed Project would affect 10.1 acres temporarily and 4.0 acres permanently. The proposed Project alignment would collocate with an existing pipeline right-of-way along the southern boundary of the WMA to minimize impacts to vegetation resources of the WMA and avoid further fragmentation of associated wildlife habitats there. Further, use of Bodcau WMA lands would require a letter of authorization from the COE, and COE has recommended measures to further avoid and minimize impacts to the Bodcau WMA, including removal of all timber and construction debris from disturbed areas. MEP anticipates that final negotiations with the COE regarding the easement and construction requirements would be finalized in May of 2008. MEP has also initiated consultations with the LDWF regarding the proposed crossing of Bodcau WMA and appropriate mitigation measures, but these consultations are not yet complete. Because these agency consultations are not yet complete, **we recommend that:**

- **Prior to construction within Bodcau WMA, MEP should consult with the COE and LDWF and file with the Secretary copies of any agreements for Project-related use and impacts to lands held in the Bodcau WMA. In that filing, MEP should also document how it would implement any COE or LDWF-recommended measures to avoid, minimize, or mitigate unavoidable impacts to Bodcau WMA lands.**

No portion of the Red'Arc Farm would be traversed by the proposed Project route in Lamar County, Texas. Given avoidance of this resource, no impacts are anticipated in association with construction and operation of the proposed Project.

3.5.3.2 Extensive Forested Tracts

MEP identified several areas of large, relatively non-fragmented forested tracts that would be crossed by the proposed pipeline based on a review of maps, aerial photographs, and the results of field surveys. The location of these tracts and the length of the associated crossings are identified in Table 3.5.1-2. We also performed our own analysis of these areas as described above. Based on our analysis, the total estimated area of extensive forested tracts that would be impacted by the proposed Project is approximately 584.2 acres during construction and 292.1 acres during operation. Although these areas are relatively non-fragmented, MEP indicated that many of these tracts are still subject to periodic harvest and/or thinning, thereby reducing their overall quality. These large forested tracts would be affected by clearing of the construction right-of-way and routine mowing, cutting, and trimming along the permanent pipeline right-of-way. Cleared forested areas located outside of the permanent right-of-way would be allowed to revegetate, but effects to those areas would be long-term, as vegetative strata would be altered for up to 50 years or more, until mature trees replace early herbaceous, shrub, and sapling strata. Forested areas within the permanent pipeline right-of-way would be permanently affected and replaced by herbaceous and scrub-shrub vegetation.

MEP also attempted to avoid and minimize impacts to large, contiguous forested tracts by routing the proposed Project pipeline through previously disturbed areas such as agricultural and open lands, as well as other previously disturbed, fragmented, and/or managed wooded areas, and by collocating with existing rights-of-way to the extent possible (approximately 51.3 percent of the proposed Project mainline route). Collocation of the proposed Project route with existing cleared rights-of-way would generally minimize impacts to extensive forested tracts by avoiding potential adverse effects associated with further forest fragmentation. As described previously, we recommended in the Draft EIS that MEP reduce the nominal construction right-of-way width along all sections of the proposed Project mainline to 100 feet in width and MEP has filed revised alignment sheets reflecting that recommendation. Additionally, the typical construction right-of-way width in wetlands would be reduced to 75 and 60 feet for the mainline and CenterPoint Lateral pipeline facilities, respectively. Furthermore, we included a recommendation in Section 2.2 that would limit the permanent pipeline right-of-way width that MEP may acquire through the condemnation process (see Section 3.8.2), if necessary, to 50 feet. Given these mitigation measures and recommendations, we believe that adverse impacts to extensive forested tracts would be significantly minimized. However, the effects of forest fragmentation would have adverse impacts on migratory birds, many species of which rely on forest interior habitats for nesting. We do not believe that Project construction or operation would result in population level impacts to migratory birds; however, to mitigate for potential localized impacts, we have included a recommendation in Section 3.6 that MEP develop a Migratory Bird Conservation Plan in consultation with FWS.

3.5.3.3 Exotic or Invasive Plant Species

A number of invasive and exotic plant species, as described in Section 3.5.1, potentially occur along the proposed Project route. Invasive species can out-compete and displace native plant species, thereby negatively altering the appearance, composition, and habitat value of affected areas. Executive Order 13112 directs federal agencies to prevent the introduction and spread of invasive species, and to minimize the impacts that such species would cause by implementing feasible and prudent measures.

The temporary removal of vegetation could result in increased opportunities for invasive and exotic species to establish themselves in Project rights-of-way and additional workspaces. MEP would implement its Plan and Procedures and other measures that would generally limit the potential for establishment and spread of invasive species, including tree-of-heaven, cogon grass, Chinese tallow tree, Chinese privet, Japanese honeysuckle, purple loosestrife, kudzu, Johnson grass, and Nepalese browntop in wetlands and uplands. These measures include erosion controls to limit sedimentation, topsoil

stripping, vegetative restoration in accordance with the prescribed dates and seed mixes specified by local soil conservation authorities or land management agencies, and post-construction monitoring to confirm vegetative restoration success. In areas not used for agriculture, restoration would be considered successful when the density and cover of non-nuisance vegetation is similar to adjacent undisturbed land.

MEP has also proposed to implement NRCS standard practices for the control of cogon grass during construction and operation of the Project, as identified in the EMCP. These practices include recommended herbicide applications for seed head suppression and treatment of infested areas. In addition, MEP has developed a Draft Control Plan for Noxious and Invasive Species. MEP has indicated that it would continue to coordinate with federal and local NRCS offices and state agencies to obtain recommendations for the control and management of exotic and invasive species along the pipeline right-of-way. The EPA recommended in its letter dated March 25, 2008 that MEP consult with the NRCS regarding measures to prevent the spread of tree-of-heaven. The Draft Control Plan for Noxious and Invasive Species includes pre-construction measures such as identification of the location of invasive species occurrences and additional agency coordination. MEP's proposed construction and post-construction measures to limit the spread of invasive species include implementation of its Plan and Procedures, washing of construction equipment, and post-construction monitoring and control of any invasive species identified. However, because these consultations are not yet complete and the agencies have not yet reviewed the Draft Control Plan for Noxious and Invasive Species, **we recommend that:**

- **MEP should consult with the FWS, NRCS, and the following state agencies: ODWC, TPWD, LDWF, MDWFP, and ADCNR, regarding its Draft Control Plan for Noxious and Invasive Species. Prior to construction, MEP should file with the Secretary a finalized version of its Control Plan for Noxious and Invasive Species that identifies all agency recommended measures that would be implemented during construction and operations to control exotic and invasive plant species.**

3.6 WILDLIFE AND AQUATIC RESOURCES

3.6.1 Wildlife

3.6.1.1 Existing Wildlife Resources

Wetlands and upland vegetation communities traversed by the proposed Project route support habitats that provide cover and forage for a variety of wildlife species. These habitats include upland forests, pine plantations, scrub-shrub uplands, open lands, and agricultural areas. Additionally, wetland and aquatic habitats include forested wetlands, scrub-shrub wetlands, emergent wetlands, and open water. These vegetative communities and habitats are discussed in detail in Sections 3.4 and 3.5, and are summarized further below. Most of these habitats occur in areas crossed by the proposed pipeline, with the remainder occurring within areas that would be occupied by the proposed aboveground facilities and construction access roads. Common wildlife species that may occur within the habitat types traversed by the proposed Project route are identified in Table 3.6.1-1. Colonial nesting waterbirds and migratory birds are also discussed below, while rare and endangered species and their habitats are discussed in Section 3.7.

Mixed Hardwood-Pine and Sloped Hardwood Upland Forests

Upland forests include mixed hardwood-loblolly pine habitats and sloped, hardwood forest habitats. Common tree species in the mixed hardwood-loblolly pine habitat include loblolly pine, along with sweetgum, water oak, winged elm, and willow oak. These areas trend toward hardwood dominance

TABLE 3.6.1-1
Common Wildlife Species That Occur along the Proposed Midcontinent Express Pipeline Project

Common Name	Scientific Name	Preferred Habitat Type					
		Upland Forest and Scrub-Shrub Uplands	Pine Plantation	Open Lands and Agriculture	Forested and Scrub Wetlands	Emergent Wetlands	Open Water
White-tailed deer	*Odocoileus virginianus*	X	X	X	X		
Gray squirrel	*Sciurus carolinensis*	X	X		X		
Bobwhite quail	*Colinus virginianus*	X	X	X			
Wild turkey	*Meleagris gallopavo*	X	X	X	X		
Mourning dove	*Zenaida macroura*	X	X	X			
Pine warbler	*Dendroica pinus*	X	X				
Brown-headed nuthatch	*Sitta pusilla*	X	X				
Brown snake	*Storeia dekayi*	X		X	X		
Eastern hognose snake	*Heterodon platyrhinos*	X	X	X			
Green tree frog	*Hyla cinerea*	X					
Mississippi kite	*Ictinia mississippiensis*	X	X				X
Red-tailed hawk	*Buteo jamaicensus*			X	X		
Carolina chickadee	Poecile carolinensis	X	X		X		
Red-winged black bird	*Agelains phoeniceus*			X			
Box turtle	*Terrapene carolina*	X		X			
Cotton mouse	*Sigmodon hispidus*			X			
Raccoon	*Procyon lotor*			X	X	X	
Armadillo	*Dasypus novemcinctus*			X	X	X	
Wood thrush	*Hylocichla mustelina*				X		
Wood duck	*Aix sponsa*				X		
Cottonmouth	*Agkistrodon piscivorus*				X	X	X
Rice rat	*Oryzomys palustris*					X	
Green heron	*Butorides striatus*					X	X
Southern leopard frog	*Rana utricularia*					X	
Bullfrog	*Rana catesbeiana*					X	
Mud turtle	*Kinosteron* spp.					X	X
Mallard	*Anas platyrhynchos*					X	X
River otter	*Lutra canadensis*				X	X	X
American coot	*Fulica americana*					X	X

when fire is suppressed. Hardwood slope habitats typically occur on slopes above stream floodplains and are dominated by tree species such as American beech, willow oak, water oak, red maple, and chestnut oak. A variety of shrub and herbaceous plants species also occur in the understory of the upland forests, providing significant cover and forage for wildlife.

Pine Plantations

Pine plantations are actively planted, managed, and cut for timber production. Plant species common in this habitat type include loblolly pine with an understory of beautyberry, Chinese privet, sweetgum, yellow jessamine, yaupon, greenbrier, and sawbriar. Differing wildlife species utilize pine plantation habitat based on tree age and growth status, with greatest usage typically in early and intermediate stages before the canopy of areas containing larger loblolly pines completely closes. However, in areas where openings and edge habitat occur, and in areas where prescribed burning is used as a management tool, wildlife habitat quality and diversity can be relatively good.

Scrub-Shrub Uplands

This habitat type has typically experienced recent disturbance and is in a successional state, undergoing colonization by a variety of vegetation types, with bushes and tree saplings emerging as the dominant strata. Common species observed in scrub-shrub uplands within the Project area include water oak, yaupon, McCartney rose, and eastern false willow, and this habitat type is valuable for wildlife dependent on edge habitats for cover and food sources.

Open Lands

Open lands include maintained utility rights-of-way, upland shrub areas, and other non-agricultural herbaceous areas. Plant species in these areas include small saplings of loblolly pine, sweetgum, and southern red oak, along with winged sumac, yaupon, greenbrier, blackberry, bluestem, and various grasses. Open lands generally provide poor to moderate quality wildlife habitat.

Agricultural Areas

Agricultural areas include locations used to grow field crops, such as rice, soybeans, and corn, as well as improved pasture lands. Although row crops generally provide poor to moderate quality cover habitat, they often provide forage to a number of species. Pastures with herbaceous species such as fescue, crabgrass, smut grass, bluegrasses, Bermuda grass, and bahia grass also provide grazing habitat for species such as white-tailed deer.

Forested Wetlands

Forested wetlands are dominated by woody vegetation that is at least 20 feet tall. These areas often contain extensive bottomland hardwoods, and common tree species in the forested wetlands observed within the proposed Project right-of-way include water oak, swamp-chestnut oak, willow oak, black willow, water elm, water tupelo, and bald cypress. Section 3.4 provides a more detailed description of the vegetation communities present in wetland habitats. The diverse vegetation assemblages comprising forested wetlands provide an abundance of cover, foraging and nesting habitat for a variety of wildlife species, such as migrating birds, reptiles, amphibians, and mammals. During winter flooding periods, this habitat also provides migratory waterfowl wintering habitat. .

Scrub-Shrub Wetlands

Scrub-shrub wetlands include all wetlands dominated by woody vegetation less than 20 feet tall and are typically not as structurally diverse as forested wetlands due to the lack of tree canopy. Scrub-shrub wetlands supply an abundance of food and cover resources for mammals, reptiles, amphibians, and birds. Common shrub species observed within the proposed Project right-of-way include eastern false-willow, buckthorn bumelia, button bush, hawthorne, trumpet creeper, swamp privet, and saplings of water oak, sweet gum, and persimmon.

Emergent Wetlands

Emergent wetlands are characterized by erect, rooted, herbaceous plants that are used by wildlife closely linked to the aquatic environment. Wildlife use these areas for nesting, feeding, and during migratory periods. Common herbaceous plants in the emergent wetlands crossed by the proposed Project include common reed, sedges, woolgrass, bulrush, swamp smartweed, soft rush, lizard's tail, and spike rush.

Open Water

Open water habitats, including some wetlands, are characterized by a lack of emergent vegetation. Within the proposed Project area, open water habitats include surface areas of streams, rivers, and ponds. Like other aquatic habitat types, open water habitats provide food and water sources, in addition to habitat for species such as wading birds, waterfowl, beavers, otters, snakes, and other wildlife species dependent on an aquatic environment.

3.6.1.2 Sensitive or Managed Wildlife Habitats

Based on the results of field surveys and agency consultations, the proposed Project would traverse several areas that have been identified as sensitive or managed wildlife habitats, including Bodcau WMA, USDA-managed lands, and extensive forested tracts. Additionally, the proposed Project would be routed near, but would not cross the White Oak Creek WMA (it would cross an associated flowage easement), the Red River National Wildlife Refuge (NWR) in Bossier Parish, Louisiana, D'Arbonne NWR (Bossier and Webster Parishes, Louisiana), and Tensas River NWR (Richland and Madison Parishes, Louisiana), and other sensitive or managed areas such as the Red'Arc Farm.

Wildlife Management Areas

Bodcau WMA is located in Bossier and Webster Parishes, Louisiana, and is managed by the LDWF in coordination with the COE and a corporate landowner (LDWF 2007b). The area contains a variety of wildlife habitats, including swamps, upland forests, open fields, and bottomland forests supporting numerous wildlife species. Many species of grasses and forbs that are typically found in states west of Louisiana can be found growing in the grassland areas of Bodcau WMA. There are numerous seasonally flooded sloughs, beaver ponds, and large areas of flatland, bottomland, and hardwood forests. Dominant tree species in the bottomland forests include bald cypress, water, overcup, willow, and cow oaks. Shortleaf and loblolly pine, white, red, and cherrybark oaks, sweetgum and elm trees dominate upland forests. In addition, an area within the Bodcau WMA is being set aside for the management of Arkansas oak trees, a globally rare tree species. Game species include white-tailed deer, squirrel, rabbit, dove, quail, waterfowl, and wild turkey for hunting; and bass for fishing. The proposed pipeline route would cross the Bodcau WMA between MP LA 35.0 and MP LA 36.6.

The White Oak Creek WMA consists of approximately 25,800 acres of bottomland hardwood forest in Titus, Morris, Bowie, and Cass Counties, Texas. Under a lease agreement with the COE, the TPWD manages the area for a variety of outdoor recreational uses, including hunting, fishing, hiking, horseback riding, and wildlife viewing (TPWD 2007d). Game species include white-tailed deer, feral hog, wild turkey, mourning dove, waterfowl, squirrels, and rabbits. The proposed Project would not cross the White Oak Creek WMA's boundaries, but would cross a flowage easement associated with the WMA approximately 1,800 feet south of the WMA boundary.

USDA-Managed Lands

Other sensitive areas occurring near the proposed Project that may potentially provide general wildlife habitat include USDA-managed areas such as CRP and WRP lands. The proposed Project would cross 41 CRP easements managed by the FSA and five WRP easements managed by the NRCS. Descriptions of the CRP and WRP lands that would be affected by the proposed Project are included in Section 3.4, Section 3.8, respectively. These programs are voluntary and promote the conservation and enhancement of various wetland and upland habitats including forested areas, although CRP easements may also include herbaceous open lands. In conserving and enhancing various habitat types, these programs also establish additional wildlife habitat. CRP and WRP lands are described in further detail in Sections 3.4 and 3.8.

Extensive Forested Tracts

In addition to the managed areas described above, MEP also identified multiple areas of large, relatively non-fragmented forested tracts that would be crossed by the proposed pipeline route based on a review of maps, aerial photographs, and field surveys. These areas are discussed further in Section 3.5, and the location of the tracts and the lengths of the associated crossings are identified in Table 3.5.1-2. Although these forested areas are relatively non-fragmented, many of the tracts are still subject to periodic harvest and/or thinning, which may somewhat reduce their overall quality as wildlife habitat. Some species, often identified as forest interior species, exclusively use or nest in relatively large, intact forested areas. For example, some warblers nest in the interior of large forested tracts, avoiding disturbed areas and edge habitats. In addition to providing protected nesting habitat, large forested tracts may also comprise contiguous forest habitat corridors for migration, feeding, and escape cover for a number of wildlife species.

National Wildlife Refuges

The proposed Project would be routed near, but would not cross the Red River NWR (Bossier Parish, Louisiana), D'Arbonne NWR (Bossier and Webster Parishes, Louisiana), and Tensas River NWR (Richland and Madison Parishes, Louisiana). All NWRs are managed by the FWS.

The Red River NWR, when expansion is finalized, will consist of 50,000 acres of federal lands and waters along the Red River between Colfax, Louisiana and the Arkansas state line. The Red River NWR will be established when enough land has been acquired to constitute an area that can be effectively managed as a wildlife refuge. The Red River Valley historically consisted of bottomland hardwoods, cypress sloughs, and shrub swamps. Establishment of the NWR will provide habitat for migratory birds, as well as restore and conserve the native plant and animal communities that once occurred in these areas (FWS 2007a). The proposed Project would be located approximately 1,500 feet south of the boundary of the Wardview area of the Red River NWR.

The D'Arbonne NWR is a 17,419-acre area owned by FWS (FWS 2007b). The forested wetlands and surrounding uplands are important for the preservation of the Lower Mississippi Valley's biological

integrity and support concentrations of ducks, wading birds, and raptors, as well as the endangered red-cockaded woodpecker and wood stork. Although the proposed pipeline would be constructed in the vicinity of the NWR, the proposed Project would be routed approximately 2 miles to the north of this refuge.

The Tensas River NWR preserves a diversity of plant and animal species in a bottomland hardwood habitat covering almost 64,000 acres (FWS 2007c). The refuge, which was created in 1980, provides habitat for approximately 400 species of wildlife, including the Louisiana black bear. The proposed pipeline route would pass approximately 0.5 mile north of the Tensas NWR in Madison Parish, Louisiana.

Other Managed Lands

The TPWD identified the wild turkey as an important game species for the Post Oak Savannah Ecoregion along the Red River. The TPWD recommended that MEP survey the area for large trees that may serve as roosting habitat for the wild turkey and to avoid or mitigate any potential impacts. This habitat survey was completed in November 2007 and a report was submitted to TPWD in March 2008. The results of the survey indicated that a small stand of dense trees was located in the general area, but few trees had open crowns or relatively large horizontal branches capable of supporting adult roosting wild turkeys. Furthermore, MEP's proposed HDD work areas would be located entirely within agricultural fields and no trees would be affected.

As described in Section 3.5, the proposed Project is located near, but would not cross the Red'Arc Farm in Lamar County, Texas. Portions of the Red' Arc Farm are enrolled in an FWS conservation easement. Specifically, approximately 18 acres of wetland habitat have been preserved for migrating waterfowl through a conservation agreement with the FWS. The owners of Red'Arc Farm also have completed an application designed to improve the value of wildlife habitat and control erosion on the property through the EQIP program. The EQIP program, which is administered by the NRCS, offers agricultural producers cost share assistance to implement on-farm conservation practices.

3.6.1.3 General Impacts and Mitigation

The extent and duration of impacts to wildlife and their habitats resulting from construction and operation of the proposed Project would depend on the species present in each habitat type and their individual life history requirements. Temporary impacts within the construction right-of-way and other work areas, such as noise or physical disturbance, displacement, and clearing and trenching of herbaceous upland and wetland habitats, would affect wildlife at or near the time of construction, but these habitats and species would generally recover quickly. Impacts to scrub-shrub upland and wetland habitats would generally be short term, except in the permanent pipeline right-of-way, which would be maintained by mowing, cutting, or trimming once every 3 years except for a 10-foot-wide corridor over the pipeline centerline that would be maintained annually in an herbaceous state. Upland forest and wetland forested habitats would be affected most substantially, with a long-term conversion of wooded areas to successional stages in the construction right-of-way and a permanent conversion to scrub-shrub or herbaceous levels within the permanent right-of-way.

Pipeline Facilities

The clearing of vegetation in the construction right-of-way and extra workspaces would reduce cover, nesting, and foraging habitat for some wildlife until construction is complete and vegetation is reestablished along the right-of-way. During construction, more mobile species would be temporarily displaced from the construction right-of-way and surrounding areas to similar habitats nearby. Some

wildlife species disturbed or displaced by construction may be able to return to adjacent, undisturbed habitats soon after completion of construction. Less mobile species, such as small mammals, reptiles, amphibians, and birds nesting in the right-of-way, may be affected by construction activities due to direct mortality or permanent displacement, potentially affecting reproduction, recruitment, and survival. Regardless of mobility, some wildlife species would be affected by the loss of cover, nesting, and foraging habitat. Similar effects, although much less extensive, would result from routine maintenance of vegetation along the permanent right-of-way. The temporary displacement of wildlife could result in increased stress and the potential for injury and/or mortality to wildlife. Wildlife avoiding construction activities could also experience temporary increase in stress, injury, and the potential for mortality. However, MEP has proposed a "no intentional take" policy for wildlife species during construction.

Non-forested habitats that would be affected by construction and operation of the proposed Project include open lands, agricultural areas, scrub-shrub and emergent wetlands, and open water. The impact on these habitats and associated wildlife species would be relatively minor and would be either temporary or short term. Due to the rapid pace of pipeline installation and the vegetation restoration measures included in MEP's Plan and Procedures, these areas would generally be restored within one growing season or within 3 years after construction for scrub-shrub habitats. Both the TPWD and ADCNR recommended seeding mixes and requested that they be consulted regarding vegetation restoration plans along the proposed pipeline. As recommended in the Draft EIS, MEP has prepared a Revegetation Plan in consultation with the NRCS and each of the state wildlife management agencies. Temporary Project-related alterations to non-forested habitats would not have a significant or long-term impact on their value as wildlife habitat.

Effects to wildlife using forest habitats would be more severe than those to wildlife inhabiting other habitat types, as vegetative strata in those areas would undergo a more marked change. Potential impacts to wildlife would include not only the broader loss of habitat in general but also the potential loss of den or nesting sites. The area of upland forest, pine plantation, and forested wetland habitats that would be affected by construction of the proposed Project would be considerable locally. TPWD expressed concern that wetlands, riparian areas, and bottomland hardwood communities would be affected by the proposed Project and recommended that appropriate avoidance and mitigation measures be provided to ensure minimization of impacts. Disturbed areas located outside the permanent right-of-way would be allowed to revert to their preconstruction cover type, but this process would take up to 50 years in some forested habitats, representing a long-term impact. Areas within the permanent right-of-way would be permanently converted and maintained at the herbaceous or scrub-shrub level.

MEP would minimize impacts to wildlife habitats through implementation of its Plan and Procedures, as described in Sections 3.2 and 3.3. MEP would also mitigate impacts through avoidance and minimization. MEP's proposed route would be collocated with or parallel existing utility rights-of-way where possible, thereby minimizing impacts to previously undisturbed vegetation and wildlife habitats. The proposed Project mainline would be collocated with existing pipeline and utility rights-of-way for approximately 265 miles (approximately 53 percent) of its length, and the proposed Project construction right-of-way would overlap existing rights-of-way by 10 to 20 feet along about 147.2 miles of that length. About 3.1 miles (approximately 74 percent) of the CenterPoint Lateral would also be collocated with existing rights-of-way. MEP had proposed a nominal construction right-of-way width of 100 to 125 feet along upland sections of the proposed mainline pipeline that would be installed using conventional, open-cut trenching techniques (see Section 2.3.1). However, we included a recommendation in the Draft EIS that MEP reduce the nominal construction right-of-way width along all sections of the proposed Project mainline to 100 feet in width and MEP has filed revised alignment sheets reflecting this change. The typical construction right-of-way width for the CenterPoint Lateral would be 75 feet. Further, the typical construction right-of-way width in wetland areas, would be reduced to 75 and 60 feet for the mainline and CenterPoint Lateral pipeline facilities, respectively. Similarly, only a

30-foot-wide corridor would be maintained within the permanent pipeline right-of-way through wetland areas.

MEP has also proposed to use HDD to accomplish pipeline installation across 39 streams, including the Mississippi River and other additional major waterbody crossings, thereby reducing impacts not only to these streams but also to adjacent wetlands, riparian areas, and bottomland hardwood communities. In Section 3.4, we have also included recommendations for MEP to develop site-specific wetland crossing plans and evaluate additional or extended HDD crossings to further reduce impacts to forested wetlands. We also included a recommendation for MEP to develop a compensatory wetland mitigation plan in consultation with the COE and other applicable agencies (see Section 3.4). Consequently, the anticipated impacts to wildlife and their habitat due to construction and operation of the proposed Project pipeline would not be significant. Construction would affect a relatively small percentage of the forested habitats in the general vicinity of the proposed Project, and routine maintenance activities during operations would be relatively infrequent and performed in accordance with MEP's Plan and Procedures.

Aboveground Facilities, Pipe Storage and Contractor Yards, and Access Roads

Construction of the aboveground facilities would permanently affect several types of wildlife habitat and associated species, but we anticipate that these impacts would be minor overall. Aboveground facilities would affect only a small percentage of the total land area and wildlife habitats affected by the proposed Project, but wildlife occurring in these areas would suffer mortality or be permanently displaced.

Construction of the five proposed compressor stations and 14 planned meter stations would permanently impact approximately 13.2 acres of upland forest habitat, not including pine plantations. Other habitat types permanently used for aboveground facilities would consist of pine plantation (approximately 14.4 acres), agricultural (approximately 42.3 acres), or open lands (approximately 0.6 acres). The majority of the impact to upland forest would occur at the Atlanta Compressor Station in Cass County, Texas (approximately 12 acres). All disturbed areas associated with the aboveground facilities that would not contain infrastructure such as buildings and other enclosures would be finish-graded and seeded or covered with gravel, as appropriate. All roads and parking areas would be graveled or paved. Thus, construction of the aboveground facility sites would result in the permanent conversion of some existing wildlife habitat into potentially non-vegetated industrial/commercial uses.

MEP has proposed to use existing pipe yards and warehouses in existing cleared, agricultural, commercial, and industrial areas as pipe storage and contractor yards for the proposed Project, thereby largely avoiding impacts to wildlife habitat associated with those construction-related activities. Should MEP identify the need for additional pipe storage or contractor yards, and if these were not located in previously disturbed commercial or industrial areas, MEP would perform appropriate environmental surveys and forward that information to the FERC for review and approval prior to their use.

MEP proposes to use a total of 157 access roads for project construction and/or operation, 142 of these access roads would only be used temporarily for project construction. Minor improvements, such as widening or grading, would be required for 145 access roads, two access roads would be newly constructed, and 10 access roads would be used with no modifications. The construction and improvements of access roads would affect approximately 399.5 acres of land. Although access road improvements could include trimming of overhead vegetation and minor widening of roads, it is not anticipated that such improvements would result in significant effects to wildlife habitats. Further, all temporary access roads would revert to their preconstruction uses following construction. Impacts to vegetation resources associated with permanent access roads at the proposed compressor station sites are

already accounted for in the land requirements reported for those facilities. Improvement, construction, and use of existing access roads would potentially affect a small amount of wildlife habitat. However, most access roads would be used only temporarily during construction, and the number of permanently maintained access roads would be minimal. Implementation of MEP's Plan and Procedures would also prevent or adequately minimize impacts to wildlife habitats associated with access road improvements, construction, and use.

3.6.1.4 Sensitive or Managed Wildlife Habitats

The proposed Project would affect several individual sensitive or managed wildlife habitats, as well as several large, relatively intact, forested tracts. Potential Project-related impacts to and mitigation for these areas are discussed below.

Wildlife Management Areas

The proposed Project would not cross the White Oak Creek WMA's boundaries, but would cross a flowage easement associated with the WMA approximately 1,800 feet south of the WMA boundary. There would be no impact to the White Oak Creek WMA because the area would be avoided due to selective routing.

The proposed pipeline route would cross the Bodcau WMA between approximately MP LA 35.0 and MP LA 36.6. The WMA would be crossed for approximately 6,800 feet (2,640 feet by HDD) and the proposed Project would affect 10.1 acres temporarily and 4.0 acres permanently. The proposed Project alignment would collocate with an existing pipeline right-of-way along the southern boundary of the WMA to minimize impacts to vegetation resources of the WMA and avoid further fragmentation of associated wildlife habitats there. MEP would be required to obtain a letters of authorization from the COE and the LDWF in order to cross Bodcau WMA.

We do not anticipate that construction and operation of the proposed Project would result in significant impacts to either the Bodcau or White Oak Creek WMAs, given implementation of the selective routing and construction practices proposed by MEP. In Section 3.5 we have included a recommendation that MEP continue consultations with the COE and the LDWF and obtain all required approvals to authorize Project-related use and impacts to Bodcau WMA lands. As a result of those consultations, the LDWF or the COE may recommend measures to further avoid and minimize impacts to WMA lands.

MEP proposed that construction activity occur from August 2008 through April 2009, which would conflict with hunting seasons for species such as deer, turkeys, rabbits, quail, ducks, and squirrels. Construction could interfere with hunting activities through noise disturbance or by affecting wildlife movement patterns, but these impacts would affect a small area for a relatively short period during construction and would be considered minor overall.

USDA-managed Lands

Construction and operation of the proposed Project would affect 41 CRP lands. As a result of land use alterations and modified vegetation type or strata associated with construction and operation of the proposed Project, landowners may no longer be eligible to participate in the CRP or to receive the payments that they currently obtain from the FSA. Since lands included in the construction or permanent pipeline rights-of-way would potentially be no longer eligible for inclusion in the CRP program, affected landowners could experience an associated financial loss and wildlife habitats could be affected. As part

of the right-of-way procurement process, MEP would negotiate with the affected landowners to obtain an easement agreement for the construction and permanent pipeline rights-of-way.

Wildlife habitats within CRP lands would be disturbed during construction, but these impacts would be temporary as restoration and revegetation would be required. CRP lands would continue to support wildlife habitat during operation of the proposed Project as well, but some forested habitat may be converted to herbaceous or scrub-shrub habitats within the permanent right-of-way. Wildlife could also be injured, killed, or displaced by construction. Overall, these temporary impacts and permanent conversions would not result in a substantial impact to wildlife resources on CRP lands.

MEP has identified five WRP properties that would be crossed by the proposed Project for a total distance of approximately 1.4 miles. All five of these WRP tracts would be crossed using HDD as proposed, thereby, eliminating direct surface impacts to vegetation and associated wildlife habitat. MEP would need to obtain Subordination Agreements from the NRCS for the pipeline wherever it crosses WRP lands. Further consideration of potential Project-related effects to WRP lands is provided in our analysis of impacts to special interest areas, which is included in Section 3.8. In that section, we provide recommendations that MEP file copies of the Subordination Agreements for all affected WRP lands, as well as documentation of any NRCS-recommended measures to further minimize or mitigate impacts to WRP lands.

Depending on the location of HDD workspace areas and other factors, construction of the proposed Project could temporarily disturb vegetation and associated wildlife habitats within the WRP easements, and such effects would be similar to those described for wetlands in general in Section 3.4. Wildlife could also be injured, killed, or displaced by construction. Due to the sensitive nature of WRP lands, MEP sought to avoid crossings of these lands through reroutes of the proposed Project alignment where possible as recommended by NRCS (see Section 4.0).

MEP would be required to obtain Warranty Easement Deed Subordination Agreements from the NRCS authorizing the crossing of any lands enrolled in the WRP, and MEP continues to consult with the NRCS regarding the proposed crossings, as well as considerations for routing, construction methods, revegetation, and other impact minimization measures. Given MEP's proposal to cross WRP lands via HDD, and the resultant avoidance of surface impacts and affects to wildlife habitat, we conclude that impacts to wildlife habitats on WRP lands would be avoided.

Extensive Forested Tracts

As discussed above and in Section 3.5, MEP identified several areas of large, relatively non-fragmented forested tracts that would be crossed by the proposed pipeline. MEP indicated that many of these tracts are still subject to periodic harvest and/or thinning, thereby reducing their overall quality somewhat. We also performed our own analysis of these areas as described in Section 3.5. Based on our analysis, the total estimated area of extensive forested tracts that would be impacted by the proposed Project is approximately 584.2 acres during construction and 292.1 acres during operation. Some species, identified as forest interior species, exclusively use or nest in relatively large forested areas. For example, some species of songbirds and black bears (see Section 3.7) are known to utilize more remote areas that may occur in the interior of large forested tracts, avoiding edge habitats and other areas disturbed by humans.

Impacts to wildlife related to construction and operation in large forested tracts would be diverse and long term or permanent. These impacts would include:

- loss of forest interior habitat and displacement of wildlife;

- increased stress and mortality, leading to reduced reproduction and recruitment;
- increased rates of nest predation, parasitism, or inter-specific competition;
- increased destruction of habitat of understory species by browsing species;
- inhibition of migration, dispersal, foraging, and other movements of forest interior species that are hesitant to cross openings; and
- increased expansion of non-native or invasive plant or animal species.

The FWS and state agencies have indicated that MEP should avoid habitat fragmentation to the extent possible. As noted above, approximately 53 percent of the proposed Project mainline route would be collocated with existing rights-of-way. Much of the remaining proposed right-of-way would pass through other previously disturbed habitats such as agricultural and open lands, as well as other previously disturbed, fragmented, and/or managed wooded areas. Additionally, construction of the proposed Project would actually benefit many wildlife species, such as white-tailed deer, wild turkey, certain raptors, and foxes that utilize forest edge and open habitats. Given the measures to avoid and minimize impacts to large forested areas, and in consideration that some disturbance occurs and would continue to occur in the identified large forested tracts as a result of commercial timber operations, we conclude that impacts to wildlife from disturbance of these areas would be minimized significantly. To further account for potential impacts to forest interior species such as migratory birds resulting from forest fragmentation, we have included a recommendation below for MEP to develop a Migratory Bird Conservation Plan in consultation with FWS.

National Wildlife Refuges

The proposed Project would be located approximately 1,500 feet south of the Wardview area of the Red River NWR, thereby preventing potential effects to wildlife and habitats. Although the proposed pipeline would be constructed in the vicinity of the D'Arbonne NWR, it would be routed at least 2 miles to the north of this refuge and no direct or indirect impacts would occur. The proposed pipeline route would pass approximately 0.5 mile north of the Tensas NWR in Madison Parish, Louisiana, and would not result in any effects to the NWR.

Other Managed Lands

MEP has proposed the use of an HDD to accomplish the crossing of the Red River in the Post Oak Savannah Ecoregion, which should minimize impacts to riparian vegetation along that river. A survey for wild turkey roosting trees in this area was completed by MEP in November 2007 and a report was prepared and submitted to TPWD in March 2008. The results of the survey indicated that a small stand of dense trees was located in the area, but few trees had open crowns or relatively large horizontal branches capable of supporting adult roosting wild turkeys. Furthermore, the proposed HDD work areas would be located entirely within agricultural fields so no impacts to trees would occur in this area. The TPWD indicated that they concurred with MEP's survey findings. Given the avoidance of impact at this area and results of the surveys at the Red River, we conclude that there would be no substantial impact to the wild turkey or associated habitat at the Red River. In addition, the Red' Arc Farm in Lamar County, Texas would not be crossed by the proposed Project and no impacts to its wildlife or associated habitats are anticipated.

3.6.1.5 Unique and Sensitive Wildlife Species

Colonial Nesting Waterbirds

"Colonial nesting waterbirds" is a collective term used to refer to a variety of bird species that obtain all or most of their food from aquatic environments and gather in large colonies, or rookeries, during the nesting season (FWS 2002). Based on consultations with the FWS and state agencies, the proposed Project would be located in an area where colonial nesting waterbirds, including herons, egrets, night-herons, ibises, spoonbills, anhingas, comorants, terns, gulls, skimmers, and pelicans, would be present.

In its initial comments on the proposed Project, the FWS recommended that any construction activity within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15) to minimize disturbance to colonial nesting waterbirds. Should construction be required during nesting season, the FWS recommended that a qualified biologist inspect the proposed Project work area for the presence of potentially undocumented nesting colonies and that on-site contractors be informed of the need to identify and avoid colonial nesting waterbirds and their nests.

As proposed, the Project would be constructed between August and April, thereby encompassing a portion of the nesting season identified by the FWS. Most major waterbodies crossed by the proposed Project would utilize HDD installation techniques to minimize disturbance to those waterbodies and adjacent riparian habitats that could support colonial nesting waterbird rookeries. Based on a site visit conducted by MEP, LDWF, and FERC staff in April 2008, MEP committed to implementing a new HDD at a forested wetland located at MP LA 42.2 that also contained a bird rookery, thereby avoiding impacts to the rookery. We also recommended in Section 3.4 that MEP develop a site-specific plan in association with the LDWF and FWS for crossing a forested wetland located at MP LA 151.1 that also contains a bird rookery. Based on the results of field surveys conducted to date, MEP has not identified any other rookeries that would be affected by the proposed Project. However, the potential exists for Project-related activities to cause impacts to rookeries, should new rookeries be encountered along the proposed Project route. Continued consultations between MEP and FWS in November 2007 resulted in agreement that MEP would conduct an aerial flyover survey of major waterbody crossings where rookeries may be located in the nesting season in May 2008. MEP also indicated that it would comply with the FWS recommendations and restrict any construction activities within 1,000 feet of an identified colonial nesting waterbird rookery to the non-nesting period.

Migratory Birds

The Migratory Bird Treaty Act regulates taking of or impacts to migratory birds, including their nests. Numerous migratory bird species potentially occur along the proposed Project route, and migratory birds would be expected to occur at least as transients in the proposed Project area throughout most of the year. Although construction and maintenance of the pipeline right-of-way would benefit some species through the creation and maintenance of edge habitats, other migratory bird species could be adversely affected, especially if nesting activities were disturbed by vegetative clearing activities associated with construction and maintenance of the proposed Project.

Based on consultations in November 2007, the FWS agreed with MEP that no adverse direct effects to nesting migratory birds would result from construction given the proposed schedule. MEP would not conduct routine vegetative maintenance of the full pipeline right-of-way more frequently than once every 3 years, except along a corridor not exceeding 10 feet in width centered on the pipeline, which would be maintained annually in an herbaceous state to facilitate periodic corrosion and leak detection surveys. As described in MEP's Plan, routine vegetative maintenance clearing would not occur between

April 15 and August 1 of any year to effectively avoid or minimize the potential for Project-related disturbance of migratory bird nesting periods during operations.

The U.S. Department of the Interior (DOI) in its letter dated April 23, 2008 expressed concerns about fragmentation of extensive forested tracts and associated secondary impacts to forest interior species such as migratory birds. Extensive forested tracts are discussed in Section 3.5. The DOI commented that forest fragmentation could result in secondary adverse impacts to nesting forest interior nesting birds regardless of when clearing or construction would occur. These impacts to migratory birds could include loss of habitat, displacement, increased nest predation or brood parasitism, and other factors.

As discussed above, the proposed Project would be constructed between August and April, as proposed, thereby avoiding the major migratory bird spring nesting season of April 15 to August 1. However, it is possible that MEP's proposed construction schedule could be modified. To account for this possibility and to adequately protect migratory birds from adverse secondary impacts resulting from forest fragmentation, **we recommend that:**

- **MEP should file a Migratory Bird Conservation Plan developed in consultation with the FWS. The plan should consider the effects of forest fragmentation on migratory birds and include measures to prevent, minimize, or mitigate such effects.**

3.6.1.6 Conclusion Regarding Impacts to Wildlife Habitats and Species

The proposed Project would affect wildlife and wildlife habitats along the proposed route, and these impacts would be temporary, long-term, and/or permanent. Specifically, wildlife could be displaced, injured, or killed by construction activities, but these impacts would be minor when considered at a population level. Wildlife habitats would be cleared, but would be allowed to revegetate in areas outside of the permanent pipeline right-of-way and aboveground facility locations, resulting in a minor net loss of habitat. Given the characteristics of identified wildlife and wildlife habitats, the anticipated impacts to those resources, the measures proposed by MEP to avoid or minimize these impacts, and our recommendations, we believe that construction and operation of the proposed Project would not significantly impact wildlife or wildlife habitats.

3.6.2 Aquatic Resources

3.6.2.1 Existing Aquatic Resources

Approximately 1,046 waterbodies would be crossed by the proposed Project route. Specifically, the proposed Project would cross 231 perennial streams, 774 intermittent streams, 41 lakes or ponds. A table identifying the waterbodies crossed by the proposed Project, as well as the their width, location along the proposed route, state waterbody classification, and proposed crossing method, is included as Appendix E of this EIS. Waterbodies crossed by the proposed Project are discussed in more detail in Section 3.3.2. These waterbodies provide habitat for a variety of aquatic species, including warmwater fishes and mussels; Table 3.6.2-1 provides a list of commonly occurring fish and mussel species in the streams along the proposed Project route.

The proposed Project would be located in an inland area where marine and estuarine fishes do not occur, and no essential fish habitat under the jurisdiction of the National Marine Fisheries Service occurs along the proposed Project route. However, streams located within the Project area do contain spawning or rearing areas for some anadromous species, and recreationally and commercially important fish species

do occur in the vicinity of the proposed Project. Additionally, virtually all of the streams that would be crossed by the proposed Project are designated for fish and wildlife and/or aquatic life.

TABLE 3.6.2-1
Fish and Mussel Species Commonly Found in Streams Crossed by the Proposed Midcontinent Express Pipeline Project

Common Name	Scientific Name
Fish Species	
White bass	*Morone chrysops*
Largemouth bass	*Micropterus salmoides*
Black crappie	*Pomoxis nigromaculatus*
White crappie	*Pomoxis annularis*
Bluegill sunfish	*Lepomis macrochirus*
Grass pickerel	*Esox americana*
Longear sunfish	*Lepomis megalotis*
Channel catfish	*Ictalurus punctatus*
Dusky darter	*Percina sciera*
Red shiner	*Cyprinella lutrensis*
Spotted sucker	*Minytrema melanops*
Mussels	
Texas liliput	*Toxolasmus texasensis*
Louisiana fatmucket	*Lampsilis hydiana*
Pondhorn	*Uniomerus tetralasmus*
Mapleleaf	*Quadrula quadrula*
Paper pondshell	*Utterbacki imbecillis*
Threeridge	*Amblema plicata*

If approved, the proposed Project would require the use of pipe storage and contractor yards and new or improved access roads. MEP would preferentially locate staging areas in existing industrial, agricultural, or commercial areas, and although no waterbodies would be affected in the areas identified to date, additional yards could be identified. Prior to construction, MEP would be required to file a complete and updated list of all temporary workspace areas, including pipe storage and contractor yards, with the FERC for review and approval prior to use.

Fisheries of Special Concern

Fisheries of special concern include areas containing exceptional recreational or commercial fisheries, specially designated streams or rivers, and waterbodies supporting rare or endangered aquatic species. Twenty-three specially designated streams or rivers supporting important recreational or commercial fisheries, or rare or endangered aquatic species would be crossed by the proposed Project. These streams and the basis for their identification as a fishery of special concern are listed in

Table 3.6.2-2. Listed threatened, endangered, and special-status species are discussed in more detail in Section 3.7.

TABLE 3.6.2-2
Fisheries of Special Concern Crossed by the Proposed Midcontinent Express Pipeline Project

Waterbody Name	Location (MP)	Proposed Crossing Method	Reason for Listing as a Fishery of Special Concern
Red River	OK 14.35; LA 12.83	Horizontal directional drill (HDD)	Contains Ouachita rock pocketbook, pallid sturgeon, and bluehead shiner; provides commercial fishery for a variety of species.
Sanders Creek	TX 9.34	HDD	Contains Ouachita rock-pocketbook mussel.
Sulphur River	TX 50.36	HDD	Contains paddlefish, gulf sturgeon, pallid sturgeon, and shovelnose sturgeon; provides commercial fishery for species such as catfish, freshwater drum, buffalo, and bowfin.
Ouachita River	LA 119.50	HDD	Contains listed mussel species and bluehead shiner, and commercial catfish and buffalo fisheries.
Coulee Ditch	LA 134.16	Open cut	Previously thought to contain pink mucket pearly mussel, since discounted; potential sensitive habitat.
Mississippi River	LA 193.92	HDD	Supports a commercial fishery for both catfish and buffalo; contains fat pocketbook mussel, blue sucker, and shovelnose sturgeon.
Big Black River	MS 12.72	HDD	Contains pyramid pigtoe mussel and rabbitsfoot.
Bakers Creek	MS 19.43	Open cut	Identified by FWS as recreationally important.
Turkey Creek	MS 25.90	HDD	Contains bayou darter.
Pearl River	MS 44.81	HDD	Identified as critical habitat for Gulf sturgeon; contains other listed species such as the Inflated heelsplitter mussel, delicate spike mussel, and ringed map turtle. Also supports a recreational fishery.
Steen Creek	MS 47.3	Open cut	Gulf sturgeon
Dabbs Creek	MS 63.18	Open cut	Identified by FWS as recreationally important.
Campbell Creek	MS 68.27	Open-cut	Identified by FWS as recreationally important.
Strong River	MS 73.06	HDD	Designated as critical habitat for Gulf sturgeon.
Oakohay Creek	MS 86.27	Open-cut	Identified by FWS as recreationally important.
Leaf River	MS 97.02	HDD	Designated as critical habitat for Gulf sturgeon; contains yellow-blotched map turtle and pearl darter.
West Tallahala Creek	MS 98.11	Open cut	Identified by FWS as recreationally important.
Piney Branch Creek	MS 108.06	Open cut	Bay Springs salamander, but may be extirpated.
Tallahala Creek	MS 115.6	Open cut	Identified by FWS as recreationally important.
Souenlovie Creek	MS 134.61	Open-cut	Identified by FWS as recreationally important.
Chickasawhay River	MS 137.81	HDD	Designated as critical habitat for Gulf sturgeon; contains yellow-blotched map turtle and pearl darter.
Buckatunna Creek	MS 147.76	Open cut	Identified by FWS as recreationally important.
Okatuppa Creek	AL 2.2	Open-cut	Identified by FWS as recreationally important.

Commercial fisheries that would be crossed by the proposed Project include the Red River, Sulphur River, Ouachita River, Mississippi River, and Pearl River. Commercial fish species caught in these rivers include catfish, drum, gar, and buffalo. In correspondence dated September 24, 2007, the FWS indicated that Bakers Creek, Campbell Creek, Oakohay Creek, Tallahala Creek, Souenlovie Creek, and Okatuppa Creek supported a variety of fishes of recreational importance. Designated critical habitat for the federally-listed threatened Gulf sturgeon is found in the Pearl River, Strong River, Leaf River, and Chickasawhay River.

The fisheries of special concern along the proposed Project route include several rivers or streams containing sensitive mussel habitats. These areas include Sanders Creek in Lamar County, Texas (a TPWD-designated mussel sanctuary), Coulee Ditch in Ouachita Parish, Louisiana (previous possible pink mucket pearly mussels find, since discounted, possible sensitive habitat), and Buckatunna Creek in Mississippi (contains numerous mussel species, including threatened and endangered species).

3.6.2.2 General Impacts and Mitigation

MEP's proposed methods for accomplishing pipeline installation across each waterbody crossed by the proposed Project route are listed in Appendix E of this EIS. Depending on the construction method used, direct impacts to aquatic habitats and species would either be avoided (e.g., through HDD) or would occur in localized areas. Waterbody crossings would be accomplished using "wet" open-cut or "dry" HDD methods, as described in detail in Sections 2.3.2 and 3.3.2. As proposed, approximately 96 percent of the total crossings of waterbodies would be accomplished using open-cut methods.

MEP has proposed to cross 39 streams, including two streams located along the CenterPoint Lateral, via the HDD method. These streams include the Mississippi River and 26 additional major waterbodies, Louisiana Natural and Scenic Rivers (Dorcheat Bayou [MP LA 42.2], Bayou D'Arbonne [MP LA 106.6], and Bayou D'Loutre [MP LA 113.1]), and NRI-listed streams [Bayou D'Arbonne (MP LA 90.6 and MP LA 106.6; two separate crossings), Bayou D'Loutre (MP LA 113.1), Big Black River (MP MS 12.7), Chickasawhay River (MP MS 137.8), Pearl River (MP MS 44.8), and Strong River (MP MS 76.1)] At the request of the resource agencies, MEP is also evaluating the use of HDD to accomplish the crossing of multiple other waterbodies and surveys and consultations are ongoing. We have included a recommendation in Section 3.3 that MEP develop site-specific crossing plans for these other streams in consultation with FWS prior to construction of the crossings.

General impacts from open-cut crossings would occur to aquatic life such as plankton, aquatic vegetation, amphibians, fish, and aquatic invertebrates including mussels. Impacts to water quality and associated aquatic habitats would include sedimentation, turbidity, altered water temperatures and dissolved oxygen levels, and introduction of contaminants, all of which can affect the ability of aquatic life to survive and reproduce. Impacts would also include the physical disturbance or destruction of instream cover due to trenching and removal of riparian vegetation. Construction activities could also result in blockage of fish migrations, interruptions of spawning activities, and entrainment of fishes or reduced stream flows during withdrawals for hydrostatic testing. These potential impacts are discussed below in more detail.

Sedimentation and Turbidity

Pipeline construction using "wet" open-cut methods would result in sedimentation and turbidity in surface waters and aquatic habitats through clearing and grading of stream banks, instream trenching, trench dewatering, and backfilling of the instream trench. Turbidity resulting from suspension of sediments during instream construction or erosion of cleared right-of-way areas would reduce light penetration and photosynthetic oxygen production (resulting in decreased levels of dissolved oxygen),

increase invertebrate drift and reduce fish feeding for brief periods, and affect the benthic community. Benthic macroinvertebrates, which typically provide a key food source for fishes, may be buried under accumulated sediments along with fish nesting sites containing eggs or larvae. Because stream gradients tend to be relatively low in the area of the proposed Project, stream velocities would also tend to be low, indicating that suspended sediments within these streams would be transported only over short distances. Increased turbidity can reduce light penetration into the water and thereby reduce photosynthetic activity and levels of dissolved oxygen in the water column. Organic materials suspended in the water can further reduce dissolved oxygen by increasing the biochemical oxygen demand. Reduced levels of dissolved oxygen can result in stress, displacement, and mortality to aquatic life including fishes, particularly during periods of low flows or high water temperatures.

Removal of vegetation from riparian areas would cause an increase in surface runoff and erosion from the pipeline corridor. However, and as specified by MEP's Procedures, the use of temporary and permanent sediment controls (e.g., silt fences and slope breakers) would minimize this impact by directing surface runoff to well vegetated areas along the sides of the construction right-of-way. Removal of riparian vegetation and loss of associated shading at waterbody crossings would result in elevated water temperatures. However, potential impacts on water temperature are not expected to be significant because of the limited amount of streambank canopy that would be cleared relative to the existing riparian vegetation in most cases. Following construction, trees and shrubs would also be allowed to reestablish themselves on waterbody banks, except for a 10-foot-wide corridor centered over the pipeline. To contain disturbed soils in upland areas and minimize the potential for sediment loss to wetlands and waterbodies, temporary erosion controls would be installed immediately after initial disturbance of soils and would be maintained throughout construction. Erosion and sedimentation control devices would be installed in accordance with MEP's Plan and EMCP.

Elevated levels of suspended sediments and turbidity would typically be limited to short periods, as MEP's Procedures require that instream construction be completed within 24 to 48 hours for minor and intermediate waterbodies, respectively. The rapid pace of construction, along with the other measures identified in MEP's Plan and Procedures, would reduce the impacts of sedimentation and turbidity on aquatic life. Overall, the impact to aquatic species resulting from construction of the proposed Project would be minor, localized, and short-term, as most waterbody habitats would remain undisturbed. Additionally, many of the warmwater species that occur in the waterbodies crossed by the proposed Project route are accustomed to occasionally turbid conditions and are therefore resilient to such periodic impacts.

MEP proposes to complete construction activities from August to April, thereby avoiding at least some of the spring season and associated periods of heavier rains. MEP's proposal would result in construction partially outside the time window for warmwater fisheries specified in the FERC Procedures (June 1 through November 30). Approval by the applicable fishery management agency of each state traversed would be required in order for MEP to perform instream construction activities outside of this specified time window. MEP indicated that it has received permission from the ODWC, TPWD, LDWF, MDWFP, and ADCNR to perform construction activities outside the specified time window. As described above and in accordance with MEP's Procedures, erosion and sediment control best management practices would be implemented at all waterbody crossings during construction to reduce impacts to affected waterbodies.

MEP proposes to use HDD crossings to accomplish pipeline installation across 39 waterbodies. As described in Sections 2.3.2 and 3.3, HDD is considered a preferred method for crossing sensitive habitats because stream bottom disruption and subsequent impacts to aquatic habitats along that portion of the pipeline route would be eliminated or minimized. However, HDD methods are not without risk, as inadvertent drilling fluid releases would result if the drilling fluid escapes containment at pits that would

be excavated at the HDD entrance and exit points or if a "frac-out" occurs. A frac-out occurs when drilling fluid escapes the drill bore hole and is forced through the subsurface substrate to the ground surface. During HDD operations, a frac-out would cause increased turbidity and sedimentation. Potential impacts from increased turbidity would include decreased water quality and compromised aquatic habitat integrity, as described above. As suspended materials settle out of the water column, sedimentation would partially or entirely cover the waterbody substrate and any sessile, benthic organisms.

As a component of the EMCP, MEP has developed a DDCP describing the procedures that would be implemented to monitor for, contain, and clean up any potential releases of drilling fluid during HDD operations. Measures in the DDCP include continuous monitoring for evidence of a release, immediate cessation of drilling fluid pumping in the event of a complete loss of circulation of drilling fluid, containment and immediate cleanup of any inadvertent releases (including restoration as appropriate), and notification of the appropriate agencies in the event of an inadvertent release. Given these protective measures, we believe that the risk to aquatic habitats and species from a frac-out would be low.

Loss of Cover

Overhanging vegetation in riparian and adjacent wetland areas, undercut banks, logs, and other streamside features provide cover for fish. These types of cover and instream habitats would be disturbed by clearing and open-cut trenching during construction, resulting in decreased shading, increased water temperatures, and displacement of fish from disturbed areas. However, streamside clearing would be localized and would occur immediately adjacent to the construction right-of-way. Overall, these impacts would be relatively minor, as they would affect a relatively small length of a much longer linear, stream feature.

As described in Sections 2.0 and 3.1, blasting is not anticipated in association with construction of the proposed Project, and associated impacts to streams and aquatic habitat and cover are therefore not expected. However, if required, MEP would notify the FERC before blasting and would conduct all blasting in accordance with its Plan and Procedures and in compliance with all applicable federal, state, and local laws, permits, and authorizations.

Impacts to fisheries and aquatic habitats resulting from maintenance of the permanent right-of-way would be relatively minor. In general, a 50-foot-wide, permanent pipeline right-of-way would be maintained in all upland areas during operations, but the maintained width would be reduced to a 30-foot-wide corridor through wetland areas. MEP has proposed to maintain a 60-foot-wide permanent right-of-way along approximately 69.2 miles (approximately 13 percent) of the proposed 42-inch-diameter pipeline facilities, but we have included a recommendation in Section 2.2 that would limit the permanent pipeline right-of-way width that MEP may acquire through the condemnation process, if necessary, to 50 feet. Additionally, MEP's Procedures require that a riparian strip at least 25 feet in width along all waterbodies be allowed to revegetate to preconstruction conditions within the construction right-of-way, although a 10-foot-wide corridor centered over the pipeline may be maintained in an herbaceous state. Additionally, herbicides or pesticides would not be used within 100 feet of any waterbody, unless authorized by a land management or state agency.

Introduction of Water Pollutants

Introduction of pollutants into waterbodies and aquatic habitats would occur through disturbance of contaminated soils or sediments, accidental spills, and inadvertent releases of drilling fluids during HDD operations. Pollutants would affect fishes and other aquatic life through acute or chronic toxicity; and sub-lethal effects would affect reproduction, growth, and recruitment. As noted above, herbicides or pesticides would not be used within 100 feet of any waterbody, unless authorized by a land management

or state agency. Pollutants can also be introduced during discharge of hydrostatic test waters. However, MEP has stated that biocides and other potentially toxic hydrostatic test water additives would not be used during hydrostatic testing for the proposed Project.

The proposed HDD drilling fluid would consist of water and bentonite. Bentonite contains a mixture of non-toxic clays and rock particles. Though potentially toxic additives are added to drilling fluids used in some applications, MEP has stated that it would not use any synthetic or potentially toxic drilling fluid additives. This protective measure would prevent the introduction of contaminants resulting from inadvertent releases during HDD operations.

Disturbance and resuspension of contaminated soils and sediments would result in adverse impacts to water quality and instream habitat. However, because there are no known contaminated sediments along the proposed Project route, adverse effects resulting from re-suspension of contaminants are therefore unlikely. Contaminated soils could also be encountered during construction activities along the proposed construction right-of-way or extra work areas. If contaminated soils were encountered during construction, MEP would implement procedures to identify and properly manage the contamination. MEP has developed a Plan for Unanticipated Discovery of Contaminated Soils or Groundwater, which is included as part of its EMCP. Given implementation of these conditions and protective measures, the risk to water quality and aquatic species from contaminated soils and sediments would be low.

Operation of heavy equipment or other vehicles in and near surface waterbodies could also introduce chemical contaminants, such as fuels and lubricants, into surface waters or result in accidental spills during construction. MEP would implement the measures specified in its Procedures and SPCC Plan regarding spill prevention, containment, and minimization near waterbodies. These measures, which are discussed in more detail in Section 3.3.2, include proper training of employees; regular inspection of equipment, storage of hazardous materials and fuels at least 100 feet from all waterbodies; and preparations to have necessary tools, equipment, and supplies on hand to contain and recover spilled materials at the job site.

If and wherever refueling were required within 100 feet of a waterbody, MEP would make a determination regarding the risks of refueling compared to the risks of relocating the equipment, and would have spill response materials immediately available. Given the implementation of the measures in MEP's Procedures and these additional measures, the risk of accidental spills or other introductions of hazardous materials to waterbodies and their effects on aquatic life would be effectively minimized.

Fish Migrations and Spawning

Construction of the proposed Project could also affect fishes by blocking migration pathways and interrupting spawning activities. Although construction disturbances could temporarily displace fish or hinder migrations in streams, we anticipate that these effects would be localized, temporary, and generally minor. Construction would proceed at a rapid pace in small and intermediate waterbodies as described above. We also consider that MEP's proposal to complete construction activities between August and April would somewhat limit impacts to most species of migratory spawning fish that inhabit the waterbodies traversed by the proposed Project. Implementation of HDD crossings at the major waterbodies likely to support species of migratory commercial and protected fishes (e.g., sturgeon) would further avoid the potential for disruption of fish migrations and spawning.

Entrainment and Reduction of Flows during Hydrostatic Testing

Entrainment of fish and other aquatic organisms would occur during withdrawals of hydrostatic test water from the source waterbodies listed in Table 3.3.2-2. These source waterbodies include two Louisiana Natural and Scenic Rivers (Bayou Dorcheat and Bayou D'Arbonne), and five NRI-listed streams (Bayou D'Arbonne, Big Black River, Pearl River, Strong River, and Chickasawhay River). MEP would prevent or adequately limit impacts from hydrostatic testing by implementing its Procedures. These measures include screening to limit entrainment of fishes and maintenance of adequate flow rates to protect aquatic life during withdrawals for hydrostatic testing. Although it is possible that fish eggs and larvae would be entrained through the screens, such impacts would most likely be minor during the proposed construction period. Additionally, MEP has developed a Draft Hydrostatic Testing Plan that also includes measures to position the intake to not withdraw silt or sediments, to withdraw water at a controlled rate, and to adhere to seasonal timing restrictions. MEP has committed to finalizing this plan in consultation with the agencies prior to construction.

3.6.2.3 Site-Specific Impacts and Mitigation

MEP proposes to use HDD crossings to accomplish pipeline installation across 39 waterbodies, including 26 major streams. As described in detail in Sections 2.3.2 and 3.3.2, HDD is a trenchless crossing method that may be used to avoid direct impacts to waterbodies containing fisheries and aquatic habitats by directionally drilling beneath them. A successful HDD would result in little or no impact to the waterbody or aquatic habitat being crossed. However, MEP has proposed to cross only 11 of the 23 streams supporting fisheries of special concern using HDD methods (Table 3.6.2-2). Further, some of the fisheries of special concern proposed for crossing via open-cut methods support sensitive mussel habitats and/or populations, including Coulee Ditch in Ouachita Parish, Louisiana, and Buckatunna Creek in Clarke County, Mississippi. Given their immobility, mussels are particularly susceptible to injury or mortality due to mechanized open-cut trenching, and they may also be significantly impacted by construction-related sedimentation through partial or complete burial. For these reasons, we have included a recommendation in Section 3.3 that MEP file site-specific crossing plans developed in consultation with FWS for Coulee Ditch, Steen Creek, Dabbs Creek, West Tallahala Creek, Tallahala Creek, Souenlovie Creek, Buckatunna Creek, Bakers Creek, Campbell Creek, Oakohay Creek, and Okatuppa Creek prior to construction of the crossings.

The use of HDD methods would minimize impacts to the aquatic habitats that occur in the subject streams, including the potential for indirect effects to sensitive mussel species. Each of the proposed and recommended HDD waterbody crossings would be constructed in accordance with MEP's Procedures and the terms of any applicable federal or state permits that may be granted. Additionally, MEP would implement its DDCP to monitor for and address any inadvertent releases of drilling fluids. These factors would effectively minimize the potential for adverse environmental impacts associated with the proposed HDD crossings.

3.6.2.4 Conclusion Regarding Impacts to Aquatic Habitats and Species

The proposed Project would result in minor and largely temporary impacts to aquatic habitats and species, and the measures proposed by MEP and our recommendations, including the filing of site-specific crossing plans developed in consultation with FWS for streams supporting fisheries of special concern, would significantly limit impacts to aquatic species and habitats. Therefore, we conclude that construction and operation of the proposed Project would not have a significant negative impact on aquatic resources.

3.7 THREATENED, ENDANGERED, AND SPECIAL-STATUS SPECIES

3.7.1 Federally Listed Threatened and Endangered Species

Section 7 of the Endangered Species Act (ESA) requires each federal agency to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat for any federally listed species. The FERC, as lead agency in the review of the proposed Project, is required to consult with the FWS to determine whether federally listed species or their designated critical habitat may occur in the Project area, and to determine the proposed action's potential effects on these species and critical habitats. For actions involving major construction activities with the potential to affect listed species or designated critical habitats, the FERC must report its findings to the FWS in a Biological Assessment (BA).

To assist the FERC in meeting our Section 7 requirements, MEP as a non-federal representative, conducted informal consultation with the FWS field offices located in Tulsa, Oklahoma; Arlington, Texas; Lafayette, Louisiana; Jackson, Mississippi; and Daphne, Alabama, which are responsible for ESA review and clearances for the proposed Project. In addition, MEP contacted state fish and wildlife agencies with expertise regarding sensitive species and reviewed database information related to potential occurrences of endangered and threatened species along the proposed Project. MEP also conducted field surveys of the proposed Project pipeline route and aboveground facility locations from March 2007 into May 2008. Field surveys have been completed in all areas where survey permission has been obtained, approximately 96.6 percent (488.6 miles) of the proposed Project mainline and the full length of the proposed CenterPoint Lateral route. Completion of surveys and habitat evaluations along the remaining portions of the proposed Project route, as well as comments from the applicable FWS field offices, would be required to complete the process of compliance with Section 7 of the ESA.

We have reviewed the information submitted by MEP, performed our own research, consulted directly with the FWS, and our analysis of the potential for Project-related effects to federally listed species and their designated critical habitats is provided in this EIS. The FWS is a cooperating agency for the development of this EIS. To comply with Section 7 of the ESA, we requested that the FWS consider our Draft EIS as our BA for the proposed Project.

Based on consultations with the FWS and review of existing records, 21 federally listed endangered or threatened species were identified that could occur within the vicinity of the proposed Project. These species and their management status are listed in Table 3.7.1-1. In addition, one candidate species for federal listing (the Pearl darter) and a federally protected species no longer listed under the ESA (bald eagle) may also occur within the Project area.

Based on our review of these species and the survey reports conducted by MEP to date, we have determined that these species and their preferred habitats either do not occur along the proposed Project route or their potential habitats would be avoided through special construction procedures. With implementation of MEP's proposed construction and mitigation plans and our recommendations, we believe that construction and operation of the proposed Project would have no adverse effect on any listed species.

TABLE 3.7.1-1
Federally Listed Species Potentially Occurring in the Proposed Midcontinent Express Pipeline Project Area

Species	Federal Status	Oklahoma Status	Texas Status	Louisiana Status	Mississippi Status	Alabama Status	County/Parish (Portion of Potential Range Crossed by Proposed Project)
Birds							
Interior least tern *(Sterna antillarum athalassos)*	E	E	E	E	E	--	Bryan County, OK; Fannin, Lamar, Red River, Franklin, Titus, Morris, and Cass Counties, TX; Caddo, Bossier, and Madison Parishes, LA; Warren, Hinds, Simpson, Smith, Jasper, and Clarke Counties, MS.
Piping plover *(Charadrius melodus)*	T	T	T	--	--	--	Bryan County, OK; Fannin, Lamar, Red River, Franklin, Titus, Morris, and Cass Counties, TX.
Red-cockaded woodpecker *(Picoides borealis)*	E	--	--	E	E	--	Caddo, Bossier, Webster, Union, Ouachita, and Morehouse Parishes, LA; Jasper County, MS.
Whooping crane *(Grus americana)*	E	--	E	--	--	--	Lamar County, TX.
Wood stork *(Mycteria americana)*	E	--	T	--	--	E	Fannin, Lamar, Red River, Franklin, Titus, Morris, and Cass Counties, TX; Choctaw County, AL.
Mammals							
Louisiana black bear *(Ursus americanus luteolus)*	T	--	T	T	T	--	Fannin, Lamar, Morris, and Cass Counties, TX; Richland, and Madison Parishes, LA; Warren, Rankin, Simpson, Smith, Jasper, and Clarke Counties, MS.
Red wolf *(Canis rufus)*	E	--	E	--	--	--	Fannin, Lamar, Red River, Franklin, Titus, Morris, and Cass Counties, TX.
Reptiles							
Eastern indigo snake *[Drymarchon couperi]*	T	-	-	-	E	T	Clarke Counties, MS; Choctaw County, AL

TABLE 3.7.1-1 (continued)
Federally Listed Species Potentially Occurring in the Proposed Midcontinent Express Pipeline Project Area

Species	Federal Status	Oklahoma Status	Texas Status	Louisiana Status	Mississippi Status	Alabama Status	County/Parish (Portion of Potential Range Crossed by the Proposed Project)
Reptiles (continued)							
Gopher tortoise *(Gopherus polyphemus)*	T	--	--	--	E	T	Jasper, and Clarke Counties, MS; Choctaw County, AL.
Ringed map turtle *(Graptemys oculifera)*	T	--	--	--	E	--	Hinds, Rankin, and Simpson Counties, MS.
Yellow-blotched map turtle *(Graptemys flavimaculata)*	T	--	--	--	T	--	Clarke County, MS.
Fish							
Bayou darter *(Ethepstoma rubrum)*	T	--	--	--	E	--	Hinds County, MS.
Gulf sturgeon *(Acipenser oxyrinchyus desotoi)*	T	--	--	--	E	T	Hinds, Rankin, Simpson, and Clarke Counties, MS.
Pallid sturgeon *(Scaphirhynchus albus)*	E	--	--	E	E	--	Caddo, Bossier, and Madison Parishes, LA; Warren County, MS.
Mollusks							
Fat pocket book *(Potamilus capax)*	E	--	--	--	E	--	Warren County, MS.
Inflated heelsplitter *(Potamilus inflatus)*	T	--	--	--	E	T	Hinds County, MS; Choctaw County, AL.
Ouachita rock pocketbook *(Arkansia wheeleri)*	E	--	E	--	E	--	Lamar, and Red River Counties, TX.
Pink mucket pearly *(Lampsilis orbiculata)*	E	--	--	E	--	--	Morehouse Parish, LA.

TABLE 3.7.1-1 (continued)
Federally Listed Species Potentially Occurring in the Proposed Midcontinent Express Pipeline Project Area

Species	Federal Status	Oklahoma Status	Texas Status	Louisiana Status	Mississippi Status	Alabama Status	County/Parish (Portion of Potential Range Crossed by the Proposed Project)
Insects							
American burying beetle *(Nicrophorus americanus)*	E	E	E	--	--	--	Bryan County, OK; Lamar and Red River Counties, TX.
Plants							
Earth fruit *(Geocarpon minimum)*	T	--	--	T	--	--	Caddo Parish, LA.
Western prairie fringed orchid *(Platanthera praeclara)*	E	T	--	--	--	--	Bryan County, OK.

Notes:
E = Endangered.
T = Threatened.

We are requesting concurrence from the FWS with the determinations of effect for all of the federally endangered and threatened species discussed above. In correspondence dated September 24, 2007 and January 8, 2008, the FWS concurred that the proposed Project would not be likely to adversely affect any federally listed species within Alabama/Mississippi or Texas, respectively, but FWS has not yet provided determinations in regard to potential impacts to federally listed species in Oklahoma or Louisiana. MEP also provided Addendum reports for federally endangered and threatened species to the FWS offices in January, April, and May 2008, but only the Arlington, Texas office of FWS has concurred with the findings of the Addendum report to date. Additionally, MEP is still in the process of completing field surveys in Oklahoma, Texas, Louisiana, Mississippi, and Alabama and associated informal consultations for many species. In particular, surveys and/or associated consultations are pending for the bayou darter, Gulf sturgeon, American burying beetle, and western prairie fringed orchid. Therefore, **we recommend that:**

- **MEP should not begin any construction activities until:**

  a. **MEP completes any outstanding species-specific surveys, files all applicable results and agency correspondence with the Secretary, and the FERC receives comments from the FWS regarding the preconstruction survey reports;**

  b. **The FERC completes Section 7 consultations with the FWS; and**

  c. **MEP receives written notification from the Director of the OEP that construction and/or implementation of conservation measures may begin.**

The preferred habitats, potential for occurrence within the proposed Project's vicinity, and our assessment of potential Project effects to federally listed threatened or endangered species are discussed further below.

Interior Least Tern

The interior least tern, a federally listed endangered species, is a small migratory shorebird that is found throughout much of the United States. Breeding, nesting, and rearing typically occur on non-vegetated portions of sandbars and islands in various rivers, including the Mississippi and Red River systems between May and August. On the lower Mississippi River, the population of this species is concentrated within approximately 500 river miles between Cairo, Illinois, and Vicksburg, Mississippi. Few birds have been observed in Louisiana along the Mississippi River in recent surveys, but several nesting colonies have recently been identified along the Red River in northwestern Louisiana and eastern Texas. Major threats to the species include habitat loss and human disturbance of nesting colonies (FWS 2007a).

As we recommended in the Draft EIS, MEP has committed to establishing a construction worker and contractor training program regarding the identification of interior least terns and their nesting habitat. The training would be given to all persons present on the work site. MEP is coordinating with the FWS regarding the contents of the training program to ensure that it is adequate.

Suitable habitat for the interior least tern occurs in the vicinity of the proposed Project at the Red River and Mississippi River crossings in Bryan County, Oklahoma; Fannin, Lamar, and Red River Counties, Texas; Caddo and Madison Parishes, Louisiana; and Warren County, Mississippi. During completion of the field surveys, MEP biologists identified potential interior least tern nesting habitat at a sandbar on the north side of the Red River in Bryan County, Oklahoma, and FWS later confirmed that site as a known interior least tern nesting site. To avoid potential impacts to interior least tern and their nesting habitat, FWS has recommended that the proposed crossings of the Red and Mississippi Rivers be

accomplished via HDD and that a 650-foot buffer zone be preserved between any construction activity and potential nesting sites if construction would be performed during the nesting season, which extends from May 15 through August 31.

As discussed in Section 3.3, MEP proposes to accomplish both Project crossings of the Red River and the Mississippi River crossing via HDD to minimize disturbance to those waterbodies and adjacent riparian habitats that could support nesting or foraging habitat. At least a portion of the proposed Project construction period (August 2008 to March 2009) would overlap with the interior least tern nesting season. However, MEP has proposed to position the entry and exit workspace areas for the HDDs associated with the crossings of the Red and Mississippi Rivers at least 650 feet away from suitable interior least tern nesting habitat, thereby preserving the recommended buffer and preventing or adequately minimizing potential impacts. It is possible that MEP could request additional workspace during the HDD process or that hydrostatic test water withdrawals or discharges could occur near suitable interior least tern habitat. Because the interior least tern has been expanding its range within the Project area, MEP should also evaluate the need for additional or repeat surveys of suitable habitat if construction would occur during the nesting season and also consider the training of construction workers in the identification of interior least terns, their nests, and habitats. Therefore, **we recommend that:**

- **Prior to construction, MEP should file with the Secretary the results of the FWS-approved preconstruction surveys for the interior least tern. These surveys should include evaluation of nesting habitat located within 650 feet of any proposed construction work area at the Red and Mississippi River crossings. If interior least terns are observed during the preconstruction surveys, MEP should not conduct any construction activity within 650 feet of interior least terns or their actively-used habitat. MEP should immediately notify the FERC staff and the FWS if interior least tern nesting colonies are observed within 650 feet of any work area at any time prior to or during construction.**

As described in Section 3.3, MEP anticipates that the proposed HDD crossings of the Red and Mississippi Rivers would be successful. MEP would further evaluate the feasibility of the proposed HDD crossings prior to construction through planned geotechnical investigations. However, in the unlikely event the proposed HDD crossings were to fail, MEP's DDCP indicates that pipeline installation across the Red and Mississippi Rivers would be accomplished using conventional open-cut installation techniques (see Section 2.3.2). An open-cut crossing of the Red or Mississippi Rivers would result in temporary impacts to riverine and riparian habitat potentially used by interior least tern. Should the proposed HDD crossings fail or planned geotechnical investigations indicate that the proposed HDD crossings are not feasible, we have included a recommendation in Section 3.3 that MEP develop site-specific, alternative crossing plans in consultation with multiple resource agencies, including the FWS. Such plans would be developed and approved prior to initiating any instream construction activities at the Red or Mississippi Rivers, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to interior least tern.

Based on the use of HDD crossings to avoid potential effects to interior least terns and their nesting habitat and our recommendations for related surveys and contractor training, we have determined that the proposed Project would be not likely to adversely affect the interior least tern.

Piping Plover

The piping plover, a federally listed threatened species, is known to occur in Bryan County, Oklahoma. Piping plover populations migrate through Oklahoma each spring and fall as they travel to and from summer and winter habitats. This species nests on wide beaches, alluvial islands and sandbars

containing areas of clumped vegetative cover, and interior alkali lakes and ponds (FWS 1992). Degradation and loss of beach nesting habitat and human disturbance serve as the primary threats to the survival of the species.

MEP examined the proposed Project route for suitable piping plover habitat, and the only suitable habitat encountered was recorded at sandbars located along the Red River in Bryan County, Oklahoma. Potential impacts to this habitat would be avoided with a successful HDD crossing. MEP has proposed to position entry and exit workspace areas for the proposed HDD of the Red River at least 650 feet away from sandbar habitat to protect interior least tern nesting habitat, and this measure should also be protective of piping plover habitat. Should the proposed HDD crossing fail or planned geotechnical investigations indicate that the proposed HDD crossing is not feasible, we have included a recommendation in Section 3.3 that MEP develop a site-specific, alternative crossing plan in consultation with multiple resource agencies, including the FWS. Such plans would be developed and approved prior to initiating any instream construction activities at the Red River, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to the piping plover. In the event of a frac-out, MEP's DDCP would be implemented to minimize potential impacts.

Based on the results of field surveys performed by MEP, the use of an HDD crossing to avoid potential effects to piping plover and their habitat, we have determined that the proposed Project would be not likely to adversely affect the piping plover.

Red-cockaded Woodpecker

The red-cockaded woodpecker, a federally listed endangered species, ranges from Maryland south to Florida and west to Texas. Habitat utilized by the red-cockaded woodpecker includes open, mature pine woodlands, and rarely deciduous or mixed pine-hardwoods located near pine woodlands. The optimal habitat is a fire-maintained setting characterized as broad savanna with a dense understory of grass and shrubs, an overstory of scattered clusters of pine trees, and lack of a midstory (NatureServe 2006). Fire suppression has altered pine woodlands in the southeastern United States by allowing encroachment of hardwoods and the development of a dense midstory, resulting in red-cockaded woodpecker habitat loss.

The red-cockaded woodpecker excavates cavities in mature (greater than 60 years old) pine trees found in open, park-like stands with little or no understory or midstory (FWS 2007d). An aggregate of suitable cavity trees is called a cluster and may include one to 20 or more cavity trees on tracts from 3 to 60 acres. Foraging habitat is defined as pine and pine-hardwood stands (i.e., 50 percent or more of the dominant trees are pine trees) over 30 years old that are located contiguous to and within 0.5 mile of the cluster (FWS 2007d). Within the Project area, this species potentially occurs in Caddo, Bossier, Webster, Union, Ouachita, Claiborne, and Morehouse Parishes, Louisiana; and Jasper and Smith Counties, Mississippi.

No red-cockaded woodpeckers were observed during the field surveys completed along the proposed Project route, and most habitats in the proposed Project area are characterized as unsuitable for the species. Most of the pine forests traversed by the proposed Project route contain pine trees too small or young to be used as cavity trees by red-cockaded woodpeckers, and where larger and older pine trees were observed, dense understory and midstory vegetation generally precluded identification of suitable habitat. However, MEP did encounter eight areas containing large pines that were determined to represent potentially suitable habitat for red-cockaded woodpecker. Additional consultations with the FWS Jackson Field Office indicated that secondary surveys for the presence of red-cockaded woodpeckers at three of the sites in Mississippi would not be required due to a lack of suitable habitat and

avoidance of impact to forested habitat (i.e., the proposed Project route would traverse an adjacent agricultural field). All of the remaining sites were examined for the presence of red-cockaded woodpeckers according to standard FWS survey protocols. These secondary surveys included detailed habitat evaluations and, if suitable habitat was found, extensive searches for red-cockaded woodpeckers and indicators of their presence, such as bark scaling, nest cavities, and vocalizations. Any potential nesting habitat located within 0.5 mile of suitable foraging habitat was also identified and examined.

An active cluster (i.e., the southern cluster) of nesting trees was identified at one site in Bossier Parish, Louisiana, but MEP adopted a route variation that would relocate the pipeline alignment to an area of unsuitable habitat located approximately 1,000 feet southeast of the active cluster into an area of marginal foraging habitat. MEP reported that the "southern cluster" was inhabited by a single red-cockaded woodpecker. A "northern cluster" was also observed in this area, but it was determined to be inactive. MEP visited this site with LDWF and FWS staff in November 2007. Surveys at another site in Claiborne Parish, Louisiana, identified suitable foraging habitat, but an absence of nesting habitat. No red-cockaded woodpeckers or indicators of their presence were recorded at any of the remaining sites, and no individuals were observed.

Based on the results of the field surveys conducted by MEP and adoption of a route variation to avoid an active cluster of nesting trees, it does not appear that construction of the proposed Project would impact any areas of suitable red-cockaded woodpecker habitat that are actively used by the species. On December 18, 2007, MEP submitted a report to the FWS regarding its expanded surveys for red-cockaded woodpecker. Based on the results of field surveys performed by MEP and the adoption of a reroute to avoid actively used habitat and to avoid potential effects to red-cockaded woodpeckers, we have determined that the proposed Project would be not likely to adversely affect the red-cockaded woodpecker.

Whooping Crane

The whooping crane, a federally listed endangered species, occurs primarily in wet habitats, such as freshwater marshes, wet prairies, shallow lakes, lagoons, salt flats, and barrier islands. Roosting primarily occurs in small, palustrine wetlands, and the species nests in dense, emergent vegetation within these wet habitats. Migrant populations of this species are currently found from the Texas Gulf Coast to southern Canada, and a small resident population resides in Louisiana. Loss of habitat due to agriculture, uncontrolled hunting, human disturbance of nesting areas, and power line collision have all contributed to the decline of the species.

Whooping cranes use isolated wetlands and agricultural fields located away from human disturbance as stop-over habitat during their migrations, and MEP indicated that the species may be encountered in Lamar County, Texas, during the annual migration from the Aransas NWR on the Texas Gulf Coast to summering grounds in Canada. No whooping cranes were observed during field surveys performed for the Project, but the surveys were conducted outside of the normal migration period of September to November. In a correspondence dated November 8, 2007, the FWS (Texas Ecological Field Services Office) indicated that surveys for the whooping crane would be unnecessary during the migration period. Given the transient and highly mobile nature of this species, as well as the extent of available stop-over habitat, it is unlikely that whooping cranes would be impacted by construction and operation of the proposed Project. Therefore, we have determined that the proposed Project would be not likely to adversely affect the whooping crane.

Wood Stork

The wood stork, a federally listed endangered species, occurs throughout the Project area in Texas, Louisiana, and Alabama. Foraging habitat for this species primarily consists of brackish and freshwater marshes, swamps, lagoons, ponds, and flooded fields, and nesting occurs in bald cypress trees, mangroves, and dead hardwoods in swamps (FWS 2007e). The species is a permanent resident in coastal areas along the Gulf of Mexico and the southeast Atlantic Ocean, and vagrant populations occur throughout the Midwest and Eastern United States.

MEP biologists observed limited areas of suitable habitat for the wood stork in Oklahoma and Texas, typically in association with open waterbodies such as ponds, but no wood storks were observed during the surveys. Based on the results of the field surveys conducted by MEP and given the transient and highly mobile nature of this species, we have determined that construction and operation of the proposed Project would be not likely to adversely affect the wood stork.

Louisiana Black Bear

The Louisiana black bear, a federally listed threatened species, is one of 16 recognized subspecies of the American black bear. Louisiana black bear populations are listed in Lamar, Fannin, Morris, and Cass Counties, Texas; Richland and Madison Parishes, Louisiana; Warren, Hinds, Rankin, Simpson, Smith, Jasper, and Clarke Counties, Mississippi; and Choctaw County, Alabama. Mississippi and Louisiana black bear populations primarily occur in bottomland hardwood and floodplain forests along the Mississippi River and in southern Mississippi (FWS 2007d). Louisiana black bear habitat is primarily associated with forested wetlands, but the bears may utilize a variety of habitat types including marsh, spoil banks, and upland forests. In upland forests, Louisiana black bears utilize soft and hard forage for food, thick vegetation for escape cover, vegetated corridors for dispersal and movement, large trees for den sites, and isolated areas for refuge from human disturbance. The primary threats to this species are the loss of bottomland hardwood forests, fragmentation of the remaining forested tracts, and human conflicts where they may be killed in automobile collisions or illegally shot (FWS 2007d). The FWS also noted that bears may become habituated to human food sources, especially garbage, when their habitat is encroached upon (FWS 2007d). Such habituation can cause nuisance behavior by Louisiana black bears, which is difficult to control and may ultimately result in removal of animals or euthanasia, thereby impacting the recovery of this species. Louisiana black bears den from December through April, preferably in bald cypress and water-tupelo trees with visible cavities that have a diameter at breast height of 36 inches or greater and are located along rivers, lakes, streams, bayous, sloughs, or other waterbodies. Where suitable den trees are unavailable, black bears will often den in shallow burrows or depressions within areas of dense cover (FWS 2007d). The FWS has extended legal protection to "actual" and "candidate" den trees. Actual den trees include any tree used by a denning bear during winter and early spring, and candidate den trees are those with visible cavities, having the appropriate diameter, and located along a waterbody.

The proposed Project alignment would cross the Sulphur River and White Oak Creek in Texas, and the basins containing these waterways were cited in TPWD's East Texas Black Bear Conservation and Management Plan as containing Louisiana black bear habitat that exceeds marginal quality. We received a comment from the public regarding the availability of new study reports for the Louisiana black bear and its habitats in Texas prepared by TPWD. We discussed the status of these new studies with the identified TPWD contact, but found that the studies were still in their initial stages, that reports were not yet available, and that our other contacts with TPWD regarding sensitive habitats would be sufficient to adequately address TPWD's concerns regarding bear habitat protection.

The proposed Project mainline and CenterPoint Lateral routes would also traverse forested tracts within Richland and Madison Parishes, Louisiana, that are being proposed by the FWS as critical habitat for the Louisiana black bear, though critical habitat designation has not yet been approved. The primary constituent elements of the proposed critical habitat in this area include forested tracts that support denning, foraging, escape cover, and dispersal. The proposed Project mainline and CenterPoint Lateral routes would be routed primarily through agricultural lands and collocated with existing utilities for the majority of their length through Madison and Richland Parishes, Louisiana, which would generally avoid and minimize the clearing and fragmentation of forested lands. Additionally, no Louisiana black bears, evidence of their presence, or actual or candidate den trees were observed during the field surveys conducted by MEP. However, the FWS expressed concerns regarding impacts to potential Louisiana black bear habitat along the Sulphur River and White Oak Creek given the limited availability of Louisiana black bear habitat in the east Texas region, and FWS indicated that two known sites of bear-occupied habitat occur approximately 1.5 miles north and south of the proposed pipeline route near Highway 80 in Madison Parish, Louisiana.

The proposed Project construction schedule extends from August 2008 to March 2009, which would include the Louisiana black bear's denning season of December through April. The FWS indicated that construction activities would be allowable if clearing was completed prior to the beginning of the denning season. The FWS indicates that construction activity could result in the disturbance of denning bears and/or the abandonment of cubs, and therefore recommended a series of impact minimization measures to be implemented if construction would occur in areas highly used/traveled by Louisiana black bear during the denning season. These measures are intended to prevent impacts to denning bears and include the following recommendations.

- The FWS and other applicable state agencies should be contacted prior to the commencement of vegetative clearing for guidance on identification of denning habitat, den sites, and survey methodology.
- A 750-foot-wide buffer zone surrounding all scrub-shrub and forested areas proposed for mechanized clearing should be thoroughly surveyed a maximum of 12 hours prior to initiating clearing activities to determine the absence of denning bears.
- Qualified staff should monitor all clearing activities to identify and ensure the protection of denning Louisiana black bears, and these monitors should communicate their observations to the applicable FWS field office at least daily.
- All land clearing activities should cease and the FWS should be notified immediately if a bear den site is identified during construction.
- No bears or den sites should be approached, handled, or damaged, and no construction workers should feed or attempt to feed bears.

MEP has agreed to implement the FWS-recommended measures to prevent or adequately minimize the potential for Project-related impacts to the Louisiana black bear during construction and operation of the proposed Project.

MEP is also consulting with the FWS regarding an approximately 2.5-mile-long segment of the proposed Project mainline route near the Tensas River NWR in Madison Parish, Louisiana, which would traverse a WRP special project area. This WRP special project area has been developed by the FWS and NRCS to restore Louisiana black bear habitat by establishing and maintaining a forested corridor to allow bear movement and to promote habitat connectivity in the area. The proposed Project would not traverse the Tensas River NWR, but the WRP special project area is located in a corridor between the NWR and the Deltic tracts (a series of forested tracts highly populated by the Louisiana black bear) located north of

the NWR. The FWS has therefore recommended a series of special operation and maintenance procedures to minimize potential impacts and maintain bear habitat connectivity along the 2.5-mile-long segment of the proposed Project route in question. MEP has agreed to implement the special operation and maintenance procedures recommended by the FWS during construction, restoration, and maintenance activities in the forested portion of the WRP special project area. These measures include:

- allowing stumps and roots to remain in place in cleared areas, thereby promoting re-sprouting and preserving root mass and seed banks;
- restoration of preconstruction surface contours, revegetation in accordance with NRCS WRP requirements, and vegetation monitoring to ensure the success of revegetation efforts;
- replanting of trees in disturbed areas outside of a 30-foot-wide right-of-way centered on the proposed pipeline;
- replanting of shrubs within the 30-foot-wide right-of-way centered on the proposed pipeline, except for a 10-foot-wide corridor centered over the pipeline, which should be planted in native grasses or small shrubs;
- regular maintenance of only a narrow, 6-foot-wide all-terrain vehicle path located over the pipeline to facilitate periodic pipeline inspections; and
- hand clearing of any trees that become naturally established during operations within the 30-foot-wide right-of-way centered on the proposed pipeline.

No Louisiana black bear were observed during the field surveys, and no candidate or actual denning trees were identified along the proposed Project route. Further, MEP would implement FWS-recommended measures to mitigate potential impacts to Louisiana black bear and their habitat during construction and operation of the proposed Project. Therefore, we conclude that the proposed Project would not be likely to adversely affect the Louisiana black bear.

Red Wolf

The red wolf is a federally listed endangered species that once roamed throughout the United States as far north as Pennsylvania and as far west as central Texas. Weighing 45 to 80 pounds, the red wolf is smaller than the gray wolf and larger than the coyote. Habitat loss, predator removal programs, and hybridization with coyote led to the decline of the species, and by 1980 the red wolf was considered extinct in the wild, though experimental populations have been reintroduced into the Alligator River NWR in North Carolina and the Great Smokey Mountains National Park (FWS 2007h). Historically, the species was known to occur throughout Texas, and habitat may also occur in Madison Parish, Louisiana. The red wolf inhabits a diverse range of habitats from swamps and wetlands to forests and coastal prairies. Dens are typically located in hollow logs, burrows, and stream banks.

MEP biologists observed no red wolves or signs of their presence during field surveys performed for the proposed Project. Given this finding, as well as the lack of evidence of a viable population in the proposed Project area, we conclude that the proposed Project would have no effect on the red wolf.

Gopher Tortoise

The gopher tortoise, a federally listed threatened species, is the only tortoise indigenous to the southeastern United States. The species spends a major portion of its life in an excavated burrow, and adult burrows average about 15 feet in length with a depth of about 6 feet (FWS 1990a). This species requires well drained, sandy soils that enable easy burrowing, abundant herbaceous vegetation for forage, and sunny nesting areas located near the female's burrow. Traditional habitats are natural xeric

communities, mostly of the longleaf-pine-scrub oak type, located on sand ridges, and the gopher tortoise typically avoids densely canopied areas in favor of open areas, even those areas that have been exposed to disturbance, such as fence rows, roadsides, and maintained utility rights-of-way. The species occurs in varying numbers from South Carolina through Florida and west to extreme southeastern Louisiana, and within the Project area, could occur in Clarke County, Mississippi, and Choctaw County, Alabama.

During the initial field surveys, MEP biologists recorded three locations of potentially suitable gopher tortoise habitat along the proposed Project route in Clarke County, Mississippi, and qualified biologists conducted detailed gopher tortoise surveys at these areas in accordance with FWS guidelines. No gopher tortoises or gopher tortoise burrows were observed during these detailed surveys. MEP has completed environmental surveys of the proposed route in Clarke County, Mississippi and Choctaw County, Alabama.

Based on the results of field surveys performed by MEP, we have determined that the proposed Project would be not likely to adversely affect the gopher tortoise.

Eastern Indigo Snake

The eastern indigo snake, a federally listed threatened species, is a large, non-venomous constrictor that frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. As the eastern indigo snake uses gopher tortoise burrows for shelter, interspersion of tortoise-inhabited sandhills and wetlands improves habitat quality for this species. Threats to this species include human collection for the pet trade, disturbance of sheltering burrows, and habitat alteration. Historically, the eastern indigo snake occurred throughout Florida and the coastal plain of Georgia, Alabama and Mississippi, but it is no longer known to occur in any of the counties traversed by the proposed Project.

Although the proposed Project route would cross suitable habitat for the eastern indigo snake, MEP biologists did not observe any specimens or gopher tortoise burrows during the field surveys completed for the Project. MEP has completed environmental surveys of the proposed route in Clarke County, Mississippi and Choctaw County, Alabama.

Based on the results of field surveys performed by MEP, we have determined that the proposed Project would be not likely to adversely affect the eastern indigo snake.

Ringed Map Turtle

The ringed map turtle, a federally listed threatened species, occurs in riverine habitats with moderate current and numerous basking logs for adequate sunning and very high water quality. Nesting habitat for this species consists of large, sand and gravel bars adjacent to rivers and streams. The decline of this species is primarily attributed to habitat alteration due to channel modification for flood control, navigation, and impoundment, as well as water quality degradation from sedimentation and pollution. The species is known to occur in the main channel of the Pearl River from near its mouth upstream to Neshoba County, Mississippi (FWS 2007e), which encompasses the proposed Project crossing of the Pearl River. The species could also occur within other riverine habitats within the Project area in Hinds, Rankin, and Simpson Counties, Mississippi.

No ringed map turtles were observed by MEP along the Pearl River or at any other location during the field surveys. Although suitable ringed map turtle habitat occurs at the proposed crossing of the Pearl River, this crossing would be accomplished via HDD, thereby avoiding direct impacts to the

species and its habitat. Should the proposed HDD crossing fail or planned geotechnical investigations indicate that the proposed HDD crossing is not feasible, we have included a recommendation in Section 3.3 that MEP develop a site-specific, alternative crossing plan in consultation with multiple resource agencies, including the FWS. Such plans would be developed and approved prior to initiating any instream construction activities at the Pearl River, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to the ringed map turtle. In the event of a frac-out, MEP's DDCP would be implemented to minimize any potential impacts.

Based on the results of field surveys performed by MEP and the use of an HDD crossing to avoid potential effects to the species and its habitat, we have determined that the proposed Project would be not likely to adversely affect the ringed map turtle.

Yellow-blotched Map Turtle

Habitat for the yellow-blotched map turtle, a federally listed threatened species, consists of wide rivers, oxbows, semi-permanent ponds, and temporary flood pools containing sand and clay or rocky bottom substrates with a moderate current and abundant cover and basking sites. Species decline is primarily due to habitat and water quality degradation. The distribution of the species within the Project area extends throughout the Chickasawhay River basin in Clarke County, Mississippi.

No yellow-blotched map turtles were observed by MEP along the Leaf or Chickasawhay Rivers, or at any other location, during the field surveys. However, suitable yellow-blotched map turtle habitat occurs at the proposed crossings of the Leaf and Chickasawhay Rivers, and the species is known to occur in those streams. As discussed in Section 3.3, MEP proposes to accomplish the Project crossing of the Leaf and Chickasawhay Rivers via HDD to minimize disturbance to that waterbody and instream aquatic habitats that could support habitat for yellow-blotched map turtles. Should these HDD crossings fail or planned geotechnical investigations indicate that the proposed HDD crossings are not feasible, we have included a recommendation in Section 3.3 that MEP develop site-specific, alternative crossing plans in consultation with multiple resource agencies, including the FWS. Such plans would be developed and approved prior to initiating any instream construction activities at the Leaf or Chickasawhay Rivers, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to the ringed map turtle. In the event of a frac-out, MEP's DDCP would be implemented to minimize any potential impacts.

Based on the results of surveys conducted by MEP and the use of HDD crossings to avoid potential effects to the species and its habitat, we have determined that the proposed Project would be not likely to adversely affect the yellow-blotched map turtle.

Bayou Darter

The bayou darter, a federally listed threatened species, is a small fish endemic to Bayou Pierre and the lower reaches of its tributaries, White Oak Creek, Foster Creek, and Turkey Creek, in Claiborne, Hinds, and Copiah Counties, Mississippi (FWS 1990b). The preferred habitat of the bayou darter occurs in shallow, meandering sections of Bayou Pierre downstream of headcut areas where stable gravel riffles or sandstone exposures are present and moderate to swift flows occur (FWS 1990b). Major threats to the Bayou darter are habitat alteration from floodplain and channel modification, petroleum exploration, transportation, farming, and silviculture (FWS 2006a).

The proposed Project route would not cross Bayou Pierre, nor any of the associated streams identified above as harboring the bayou darter. Different, but identically named streams would be crossed

by the proposed Project in Simpson County, Mississippi (tributaries to White Oak Creek) and Hinds County, Mississippi (Turkey Creek), but the species does not occur in those streams. The proposed Project would cross Tallahala Creek, a tributary to Bayou Pierre in Hinds County, Mississippi, but the results of field surveys performed by MEP biologists indicate that suitable habitat for the species does not occur at the proposed crossing location and the FWS has concurred with this assessment. However, because of the potential for indirect effects associated with the proposed open-cut crossing of Tallahala Creek, the original FWS recommendation that MEP accomplish the crossing of Tallahala Creek in a similar manner as other recent projects (e.g., HDD was used at this stream for the ongoing Southeast Expansion Project), and ongoing consultations between FWS and MEP, we have included a recommendation in Section 3.3 that MEP develop a site-specific crossing plan in consultation with the FWS to accomplish the crossing of Tallahala Creek and submit that plan to the Commission prior to construction.

Based on the results of surveys conducted by MEP and our recommended implementation of a site-specific crossing plan in consultation with the FWS at Tallahala Creek to avoid potential effects to the species and its habitat, we have determined that the proposed Project would be not likely to adversely affect the bayou darter.

Gulf Sturgeon

The Gulf sturgeon, a federally listed threatened species, is an anadromous fish that inhabits the Gulf of Mexico and its drainages primarily from the Mississippi River east to the Suwannee River in Florida. This species may also occur sporadically as far west as Texas and in marine waters around Florida. Adult Gulf sturgeon congregate in the deeper waters of rivers with moderate currents and sand and rocky bottoms (FWS 2006b). Spawning adults move upstream in the spring to spawn over coarse substrates such as bedrock, cobble, and gravel in water up to 26 feet deep. Spawning in the upstream reaches of rivers is typically followed by downstream migrations. Juveniles (less than 2 years of age) are not known to migrate out of rivers and estuaries. The species is threatened by habitat destruction and degradation, and by the construction of dams that have prevented access to historic migration routes and spawning areas (FWS 2006b).

The historical range of the Gulf sturgeon includes the Mississippi and Pearl Rivers, which would both be crossed by the proposed Project route, as well as some larger tributaries of these streams. The species is listed as occurring within the Pearl, Chickasawhay, Leaf, Strong, and Pascagoula River systems in Hinds, Rankin, Simpson, and Clarke Counties, Mississippi, and Choctaw County, Alabama, and both the Pearl and Chickasawhay Rivers are designated as critical habitat for the species. Primary constituent elements of the critical habitat include abundant food items, riverine spawning sites, holding areas, stream flows, water quality, sediment quality, and unobstructed migratory pathways. As proposed by MEP, the Mississippi, Strong, Leaf, Chickasawhay, and Pearl Rivers would all be crossed via HDD, thereby avoiding direct impacts to the species and its habitat. Should these HDD crossings fail or planned geotechnical investigations indicate that the proposed HDD crossings are not feasible, we have included a recommendation in Section 3.3 that MEP develop site-specific, alternative crossing plans in consultation with multiple resource agencies, including the FWS. Such plans would be developed and approved prior to initiating any instream construction activities, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to the Gulf sturgeon. In the event of a frac-out, MEP's DDCP would be implemented to minimize any potential impacts. We also have included a recommendation in Section 3.3 that MEP develop site-specific plans to accomplish the crossing of Steen and Souenlovie Creeks (which also provide habitat for Gulf sturgeon) via site-specific crossing plans developed in consultation with FWS.

Based on the use of HDD crossings and our recommendations to develop site-specific crossing plans in consultation with FWS to avoid potential effects to Gulf sturgeon and its habitat, we have determined that the proposed Project would be not likely to adversely affect the Gulf sturgeon.

Pallid Sturgeon

The pallid sturgeon, a federally listed endangered species, is a large, freshwater fish that lives in large, free flowing, turbid rivers with low to medium gradients. The historic range of pallid sturgeon includes the middle and lower Mississippi River, the Missouri River, and the lower reaches of the Platte, Kansas, and Yellowstone River. Pallid sturgeon are rare, but widely distributed in the Missouri River and the Mississippi River downstream of the mouth of the Missouri River (FWS 1993). Threats to this species include habitat loss through river channelization and placement of dams (FWS 2007g).

Within the Project area, the pallid sturgeon is known to occur in the Red River and the Mississippi Rivers, both of which would be crossed by the proposed Project route. As discussed in Section 3.3, MEP proposes to accomplish the Project crossings of these waterbodies via HDD to minimize disturbance to the rivers and instream aquatic habitats that could provide suitable habitat for the pallid sturgeon. Should the HDD crossings fail or planned geotechnical investigations indicate that the proposed crossings are not feasible, we have included a recommendation in Section 3.3 that MEP develop site-specific, alternative crossing plans in consultation with multiple resource agencies, including the FWS. Such plans would be developed and approved prior to initiating any instream construction activities, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to the pallid sturgeon. In the event of a frac-out, MEP's DDCP would be implemented to minimize any potential impacts.

Based on the use of HDD crossings to avoid potential effects to the species and its habitat, we have determined that the proposed Project would be not likely to adversely affect the pallid sturgeon.

Fat Pocketbook Mussel

The fat pocketbook mussel, a federally listed endangered species, is a large freshwater mussel that is typically found in larger river systems that contain slow moving water and sand, mud, and fine-gravel substrates. Threats to this species have included habitat modifications through dredging and flood control. This species was once widely distributed in the Mississippi River drainage system, but its current range is primarily limited to an approximately 200-mile-long stretch of the St. Francis River system in Arkansas, the lower Wabash River in Indiana, the mouth of the Cumberland River in Kentucky, and the Mississippi River in Missouri (NatureServe 2006). The species is listed in Mississippi due to the re-introduction of the species in the upper Mississippi River in 1989, although a study in 1992 found that recruitment at the introduction sites was unsuccessful (Koch 1993). The fat pocketbook mussel is apparently extirpated from the rivers that would be crossed by the proposed Project, though it remains listed in Warren County, Mississippi.

As discussed previously, MEP proposed to accomplish the Project crossing of the Mississippi River via HDD, and our recommendation for development of a site-specific crossing plan in the unlikely event that crossing were to fail, as well as consultations with applicable agencies, including the FWS, would identify any appropriate measures to avoid and minimize potential adverse effects to the fat pocketbook mussel, should it be determined to occur in the Project area. Based on the apparent extirpation of the fat pocketbook mussel from waterbodies that would be affected by the proposed Project and the proposed use of HDD to cross the Mississippi River, we have determined that the proposed Project would be not likely to adversely affect the fat pocketbook mussel.

Inflated Heelsplitter

The inflated heelsplitter, also known as the Alabama heelsplitter, a federally listed threatened species, is a large freshwater mussel known to occur in the Amite River in Louisiana and five sites in the Tombigbee and Black Warrior Rivers in Alabama (Stern 1976, Hartfield 1988). The species was historically present in the Pearl River, but has not been observed there in almost 100 years and is believed to be extirpated. The preferred habitat of this species is soft, stable substrate in slow to moderate currents (Stern 1976), but it has also been found in sand, mud, silt and sandy gravel (Hartfield 1988).

The inflated heelsplitter is known to occur in the Tombigbee River, a portion of which extends into Choctaw County, Alabama, but the proposed Project route would not cross that waterbody. The proposed Project route would cross the Pearl River, but as discussed previously, MEP proposes to accomplish that crossing via HDD. Avoidance of direct impacts to that waterbody and our recommendation for development of a site-specific crossing plan in the unlikely event that crossing were to fail, as well as consultations with applicable agencies, including the FWS, would identify any appropriate measures to avoid and minimize potential adverse effects to the inflated heelsplitter, should it be determined to occur in the Project area. Based on the apparent extirpation of the species from waterbodies that would be affected by the proposed Project and the proposed use of HDD to cross the Pearl River, we have determined that the proposed Project would be not likely to adversely affect the inflated heelsplitter.

Ouachita Rock Pocketbook Mussel

The Ouachita rock pocketbook mussel, a federally listed endangered species, inhabits pools and backwaters of large creeks and river side channels near the southern slope of the Ouachita Uplift that contain gravel, or sand. Primary threats to this species include the degradation of habitat and water quality. The Ouachita rock pocketbook is presently known to occur in only approximately 157 miles of the Red River system (including the Kiamichi and Little Rivers) and about 111 miles of the Ouachita River system in south-central Arkansas, though other recent evidence of the species consists of single shells recovered from two tributaries of the Red River, Pine and Sanders Creeks, in Lamar County, Texas (FWS 2004).

The proposed Project would not affect Pine Creek, but it would traverse Sanders Creek, which has also been designated as a mussel sanctuary by the TPWD. MEP proposes to cross Sanders Creek via HDD, which if successful, would avoid instream disturbance and prevent impacts to mussels there. Should the HDD crossing fail or geotechnical investigations indicate that the proposed HDD crossing is not feasible, we have included a recommendation in Section 3.3 that MEP develop a site-specific, alternative crossing plan in consultation with multiple resource agencies, including the FWS. Such plans would be developed and approved prior to initiating any instream construction activities, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to the Ouachita rock pocketbook mussel. In the event of a frac-out, MEP's DDCP would be implemented to minimize any potential impacts. The TPWD and FWS have concurred with MEP's conclusion that the proposed Project would not affect the Ouachita rock pocketbook mussel.

Based on the use of a HDD crossing to avoid potential effects to the species and its habitat in Sanders Creek, we have determined that the proposed Project would be not likely to adversely affect the Ouachita rock pocketbook mussel.

Pink Mucket Pearly Mussel

The pink mucket pearly mussel, a federally listed endangered species, inhabits medium to large rivers with strong currents and sometimes impounded portions of rivers. Depth requirements range from 1.5 to 26 feet, and preferred substrate consists of sand, gravel, and pockets between rocky ledges in high velocity areas and mud and sand in slower moving waters. The species was historically distributed in 25 rivers and tributaries in the Ohio, Cumberland, Mississippi, and Tennessee River systems, but is now likely extirpated in Ohio, Pennsylvania, and Illinois (FWS 2007i). Threats to this species have included commercial over harvesting, water quality degradation, and habitat modification due to channelization, dredging, and impoundments.

Within the Project area, the species is known to occur in Ouachita and Morehouse Parishes, Louisiana, and MEP biologists observed a possible shell of a pink mucket pearly mussel in Coulee Ditch in Ouachita Parish, Louisiana, during the field surveys. Subsequent evaluation and consultation with FWS indicated that this specimen was not a pink mucket pearly mussel and that the original identification was incorrect. MEP proposes to cross Coulee Ditch via the open-cut installation method, but open-cut construction methods could negatively affect other mussels directly due to mechanically induced injury or indirectly due to sedimentation and turbidity. In response to comments received from the FWS and because this stream would be crossed via HDD by the recently certificated Gulf Crossing Project, we have included a recommendation in Section 3.3 that MEP develop a site-specific plan to cross Coulee Ditch in consultation with FWS. It is anticipated that the required agency consultation would identify any appropriate measures to avoid and minimize potential adverse effects to habitat for sensitive aquatic species.

Based on the apparent absence of the pink mucket pearly mussel in Coulee Ditch and further our recommended development of a site-specific crossing plan developed in consultation with FWS to avoid potential effects to aquatic habitat in Coulee Ditch, we have determined that the proposed Project would be not likely to adversely affect the pink mucket pearly mussel.

American Burying Beetle

The American burying beetle, a federally listed endangered species, occupies a variety of habitats including oak-pine woodlands, open fields, oak-hickory forest, open grasslands, and edge habitat. It is a nocturnal species that depends upon the carrion of vertebrate carcasses for food and reproduction and can be found in a variety of habitats that contain carrion (FWS 2007j). During winter months, the species buries itself in the soil. The historic range of the beetle included the eastern half of North America, including the eastern half of Oklahoma and northern Texas. Primary threats to this species include habitat fragmentation, soil disturbance, competition from vertebrate scavengers, insecticides, and electrified insect controllers.

Within the Project area, the American burying beetle may occur in Bryan County, Oklahoma, and Lamar and Red River Counties, Texas. Based on consultations with the FWS and ODWC, MEP determined that detailed surveys completed in accordance with standard FWS protocols would be needed to ascertain the presence of the species along the proposed Project route and evaluate potential for Project related effects to the species. MEP completed field surveys for the America burying beetle along the proposed Project right-of-way in accordance with FWS survey guidelines during August and September 2007. No American burying beetles were captured in this sampling effort, and the results of the survey indicate that the species is likely not present within the sampled portion of the Project area. Other species of burying beetles were captured during the sampling efforts, indicating that the sampling methods were effective.

However, we note that approximately 14 miles of proposed Project route in Bryan County, Oklahoma and Lamar County, Texas were not sampled because the final proposed route location had not been selected by MEP at the time of the field survey. We view this gap in the sampling locations as potentially significant and have included a recommendation below that MEP not begin construction until all necessary surveys are completed, FWS comments on the preconstruction surveys, and the FERC notifies MEP that Section 7 consultations are complete and construction may begin. We did receive a comment from the public regarding the overall adequacy and timing of MEP's American burying beetle surveys. However, based on our coordination with the FWS-Arlington, Texas office we conclude that the surveys were generally conducted appropriately, except for the unsurveyed portion of the route noted above.

Based on the results of MEP's field sampling efforts to date, the apparent absence of this species within the surveyed portion of the proposed Project area, and our recommendation that outstanding surveys be completed in consultation with FWS, we have determined that the proposed Project would be not likely to adversely affect the American burying beetle.

Earth Fruit

The earth fruit, a federally listed threatened species, is primarily found along the edge of saline slick barrens that are primarily devoid of other vegetation. This species also inhabits shallow seeps located at the base of rock outcrops containing saline alkali soils, high levels of magnesium, little organic matter, and a thin layer of soil. This species is rarely visible, except when in bloom between March and April. Major threats to this species include the conversion of prairie to pastureland, cattle grazing, and off-road vehicle traffic. The earth fruit is distributed throughout Missouri and Arkansas and is also known to occur in Caddo Parish, Louisiana, within the vicinity of the proposed Project area.

MEP indicates that no potential habitat for the species was identified during the initial field surveys and that the alkali soil types preferred by the species do not occur along the proposed Project route. Based on the results of MEP's field investigations and the lack of suitable soil conditions in the proposed Project area, we have determined that the proposed Project would be not likely to adversely affect the earth fruit.

Western Prairie Fringed Orchid

The western prairie fringed orchid, a federally listed endangered species, is a tallgrass prairie and meadow plant. Preferred habitat is unplowed, prairies and sedge meadows, though plants have also been observed in successional communities such as borrow pits, old fields, and roadside ditches. The western prairie fringed orchid requires direct sunlight and moist habitats, and is dependent on periodic disturbance events. The species is a long-lived perennial and emerges in May and blooms in June, or July further north. Conversion of native prairie to cropland is primarily responsible for the decline of this species. Historically, the western prairie fringed orchid was distributed throughout much of the western Central Lowlands and eastern Great Plains physiographic provinces of the central United States, including Oklahoma (FWS 1996). Fewer than 50 specimens have been identified in Oklahoma.

Within the Project area, the western prairie fringed orchid may occur in Bryan County, Oklahoma. MEP indicates that no potential habitat for the species was identified during the initial field surveys, but MEP has committed to performing surveys for the western prairie fringed orchid during its flowering period in June 2008. We have included a recommendation below that would require MEP to complete all necessary field surveys and allow for the Commission to complete any required consultations with the FWS before construction of the proposed Project could proceed. These consultations would include development of appropriate impact avoidance, minimization, or mitigation measures in

coordination with the FWS. Based on our recommendation that pending field surveys and ongoing FWS consultations be completed before construction can begin, we have determined that the proposed Project would be not likely to adversely affect the western prairie fringed orchid.

3.7.2 Special-status Species

3.7.2.1 Federal Candidate Species

Pearl Darter

The Pearl darter is not presently federally listed as endangered or threatened and the FWS does not require consultation regarding potential impacts to the species. However, because it is a candidate species, FWS encourages avoidance of activities that may negatively impact the Pearl darter in the event that it becomes listed in the future and due to its sensitive status. Historically, the species was known from the Pascagoula and Pearl River drainages in Mississippi, but Pearl darters may be extirpated from the Pearl River drainage. Within the Pascagoula River system, the species typically occurs in gravel riffles and areas of sandstone exposures with large rock cover. Threats to the species include habitat loss and degradation and the elimination of riparian vegetation.

Within the Project area, the Pearl darter could potentially occur in the Chickasawhay, Leaf, Pearl, and Strong Rivers and Tallahala and Souenlovie Creeks. As proposed by MEP, the Chickasawhay, Leaf, Strong, and Pearl Rivers would all be crossed via HDD, thereby avoiding direct impacts to the species and its habitat. Should these HDD crossings fail or planned geotechnical investigations indicate that the proposed HDD crossings are not feasible, we have included a recommendation in Section 3.3 that MEP develop site-specific, alternative crossing plans in consultation with multiple resource agencies, including FWS. Such plans would be developed and approved prior to initiating any instream construction activities, and it is anticipated that the required agency consultations would identify any appropriate measures to avoid and minimize potential adverse effects to the Pearl darter. In the event of a frac-out, MEP's DDCP would be implemented to minimize any potential impacts. We have also included a recommendation in Section 3.3 that MEP develop site-specific crossing plans in consultation with FWS to accomplish the crossing of Tallahala and Souenlovie Creeks.

Based on the use of HDD crossings and development of site-specific crossing plans to avoid potential effects to the species and its habitat, we have determined that the proposed Project would be not likely to adversely affect the Pearl darter.

3.7.2.2 Bald Eagle

The bald eagle, which was recently removed from the list of federally endangered and threatened species, is a large carnivorous bird whose range covers virtually all of North America. Though no longer afforded federal protection under the ESA, bald eagles are still protected under the provisions of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Preferred habitat consists of areas near water bodies, such as coasts, bays, lakes, rivers, and forested wetlands. Bald eagles are opportunistic feeders and will both hunt and scavenge. Primary food sources are fish, waterfowl, and seabirds, though bald eagles are also known to feed on carcasses of large animals such as sheep (NatureServe 2006). Mixed conifer and hardwood forests and woodlands with large, accessible trees are used for roosting and nesting. Threats to the bald eagle include loss of habitat, human disturbance, environmental contamination (particularly dichloro-diphenyl-trichloroethane), decreasing food supply, and illegal shooting (NatureServe 2006). Bald eagles are sensitive to human activity and disturbance and will abandon otherwise suitable habitat if disturbance is consistent (FWS 2007f).

Bald eagles may potentially occur along virtually the entire proposed Project route in Oklahoma, Texas, Louisiana, Mississippi, and Alabama, and the species occasionally nests near waterbodies in the Project area from October to May. Based on FWS recommendations, MEP conducted additional surveys for bald eagle nests along the Red River in Oklahoma after the trees lost their foliage. MEP completed these surveys in October and November 2007 and no bald eagles or their nests were observed. Additionally, a potentially active bald eagle nest was identified within 660 feet of the proposed Project route in Union Parish, Louisiana during consultations with FWS, and MEP conducted field surveys to ascertain the status of that nest during October 2007. However, no signs of bald eagles or their nests were observed, and additional coordination with the LDWF confirmed that the nest was no longer present. Should any bald eagle nest be determined to be active and located within 660 feet of the proposed construction area, MEP has committed to implementing construction activities in the vicinity of the nest in accordance with the FWS *National Bald Eagle Management Guidelines*, which include provisions for the maintenance of buffer zones and limitation of activities that may result in disturbance to nesting birds during the breeding season.

Given the lack of any known bald eagle nests near the proposed Project and MEP's commitment to implement the FWS *National Bald Eagle Management Guidelines* if construction would occur in proximity to an active bald eagle nest during the nesting season, we have determined that the proposed Project would be not likely to adversely affect the bald eagle.

3.7.2.3 State-listed and Rare Species

In addition to federally listed species, other special status species may occur within the vicinity of the proposed Project facilities. Special-status species include state-listed endangered, threatened, and species of concern identified through consultations with the ODWC, TPWD, LDWF, MDWFP, and ADCNR. The FERC encourages coordination between MEP and state resource agencies to protect state-listed or rare species.

Based on our research and consultation with the ODWC, TPWD, LDWF, MDWFP, and ADCNR, we have determined that 21 state-listed or rare species, in addition to those species that are also federally listed and discussed in Section 3.7.1, could occur within the vicinity of the proposed Project. These species, their status, and preferred habitat are presented in Table 3.7.2-1.

In general terms, impacts to state listed species would be similar to those described for federally listed species. Birds could be affected by the loss of nesting or foraging habitat during clearing for the proposed Project and they could also be disturbed by human activity. Fish and other aquatic species could be affected by open-cut construction methods through the alteration of stream habitats, along with associated increases in turbidity and sediment load. Although larger streams and rivers would typically be crossed using methods (i.e., HDD) that would avoid the direct and indirect impacts associated with open-cut crossings, frac-outs could occur resulting in turbidity and the deposition of drilling fluids. Terrestrial wildlife, such as mammals and reptiles, could be subjected to mortality or displacement during clearing and could suffer habitat reductions along the permanent pipeline right-of-way.

The generalized impacts described above would largely be avoided or minimized by the implementation of MEP's proposed construction and mitigation plans and our recommendations. These measures include selective Project routing through previously disturbed areas where possible; collocation with existing utilities to minimize construction and permanent land requirements and reduce habitat fragmentation; and implementation of MEP's Plan and Procedures, DDCP, and SPCC Plan. Given the nature of the species that may potentially be affected and the mitigation measures that would be implemented as part of the proposed Project, we believe that impacts to state-listed species would be

TABLE 3.7.2-1
State-listed and Rare Species Potentially Occurring in the Proposed Midcontinent Express Pipeline Project Area

Species	Oklahoma Status	Texas Status	Louisiana Status	Mississippi Status	Alabama Status	Habitat
Birds						
Bald eagle *(Haliaeetus leucocephalus)*	T	T	E	E	T	Preferred habitat consists of areas near waterbodies, such as coasts, bays, lakes, rivers, and forested wetlands. Mixed conifer and hardwood forests and woodlands with large, accessible trees are used for roosting and nesting. Once the eagles establish a suitable breeding territory, they will return to the same area year after year, often using several nests within the territory during different years.
American peregrine falcon *(Falco peregrinus)*	--	E	--	--	--	Mountain ranges, river valleys, and seacoasts. Nest on high cliffs or tall buildings.
Bachman's sparrow *(Aimophila aestivalis)*	--	T	T	--	--	Fire-maintained mature to old pine woodland. Well-developed grass and herb groundcover with limited shrub and hardwood midstory. Able to colonize recent clear-cuts, but such habitat is suitable only for a short time. Dry open pine with an undercover of grasses and shrubs, hillsides with patchy brushy areas, overgrown fields with thickets and brambles, grassy orchards, and large clear-cuts.
Bewick's wren *(Thryomanes bewickii)*	--	--	--	E	--	Nest in available cavities in brushy areas, clearings, orchards, fencerows, suburbs, riparian areas, cactus and mesquite, and chaparral.

TABLE 3.7.2-1 (continued)
State-listed and Rare Species Potentially Occurring in the Proposed Midcontinent Express Pipeline Project Area

Species	Oklahoma Status	Texas Status	Louisiana Status	Mississippi Status	Alabama Status	Habitat
Mammals						
Black bear *(Ursus americanus)*	--	T	--	E	--	Mixed deciduous-coniferous forests with a thick understory and large hardwood wetlands. Denning occurs in tree cavities, dense vegetation, fallen trees, or cave-like cavities.
Rafineque's big-eared bat *(Corynorhinus rafinesquii)*	--	T	--	--	--	Shallow caves or rock shelters, hollow trees, abandoned buildings, girder bridges for nesting and roosting. Mature upland and lowland forest.
Reptiles						
Alligator snapping turtle *(Macrochelys temminckii)*	--	T	--	--	--	Slow, deep water of rivers, sloughs, oxbows, canals, swamps, bayous, ponds, and shallow creeks.
Texas horned lizard *(Phrynosoma cornutum)*	--	T	--	--	--	Open areas with sparse vegetation in sandy to rocky soils, likes to burrow.
Timber/canebrake rattlesnake *(Crotalus horridus)*	--	T	--	--	--	Hardwood forests in river bottoms, swampy areas, floodplains, wet pine flatwoods, and hydric hammocks.
Northern scarlet snake *(Cemophora coccinea copei)*	--	T	--	--	--	Well drained soils, scrubby pines or oaks, found under logs or debris.
Amphibians						
Eastern tiger salamander *(Ambystoma tigrinum)*	--	--	P	--	--	Inhabits woodlands, marshes, grasslands, farmlands, and suburban areas that are adjacent to breeding ponds.

TABLE 3.7.2-1 (continued)
State-listed and Rare Species Potentially Occurring in the Proposed Midcontinent Express Pipeline Project Area

Species	Oklahoma Status	Texas Status	Louisiana Status	Mississippi Status	Alabama Status	Habitat
Fish						
Crystal darter (Crystallaria asprella)	--	--	--	E	--	Prefers sand and gravel bars in larger rivers and streams.
Shovelnose sturgeon *(Scaphirhynchus platorynchus)*	--	--	--	E	T	Sand and gravel mixed or mud substrate areas with strong currents in deep channels of large, turbid rivers.
Paddlefish *(Polyodon spathula)*	--	T	P	--	--	Slow water in medium and large rivers. Channels, oxbows, backwaters, and impoundments.
Blackside darter *(Percina maculata)*	--	T	--	--	--	Pools with gravel or sand bottoms in cool, non-turbid creeks and small streams.
Creek chubsucker (*Erimyzon oblongus*)	--	T	--	--	--	Creeks and small rivers. River mouths sand and gravel bottom pools, riffles, and lake outlets.
Blue sucker *(Cycleptus elongatus)*	--	T	--	--	--	Gravel or rubbled bottomed areas of deep rivers, reservoirs, or narrow channels with a moderate to swift current.
Bluehead shiner *(Pteronotropis hubbsi)*	--	T	--	--	--	Oxbows and sluggish creek or small river pools containing vegetative cover over mud or sand substrates.
Southern redbelly dace *(Phoxinus erythrogaster)*	--	--	--	E	--	Cool headwaters of small streams that have permanent spring flows. Use overhanging banks as cover.

TABLE 3.7.2-1 (continued)
State-listed and Rare Species Potentially Occurring in the Proposed Midcontinent Express Pipeline Project Area[a]

Species	Oklahoma Status	Texas Status	Louisiana Status	Mississippi Status	Alabama Status	Habitat
Mollusks						
Pyramid pigtoe *(Pleurobema rubrum)*	--	--	--	E	--	Large and medium sized rivers; riffles and shoals, shallow water with coarse-particle substrates, sand bars, or in deep water (>4 meters) with mud and sand bottoms. Moderate to swift currents.
Delicate spike *(Elliptio artata)*	--	--	--	E	--	Portions of large creeks of rivers containing moderate to strong currents and sand, cobble, or gravel bottoms.

Notes:
C = Candidate for listing.
E = Endangered.
P = Proposed for listing.
T = Threatened.

adequately avoided and/or minimized. However, MEP is still in the process of completing field surveys in Oklahoma, Texas, Louisiana, Mississippi, and Alabama and associated informal consultations for many species. To ensure that potential impacts to state listed species are adequately addressed, **we recommend that**:

- **MEP should consult further with the ODWC, TPWD, LDWF, MDWFP, and the ADCNR regarding state-listed and rare species to determine the need for additional surveys or mitigation that would further minimize or avoid potential impacts to such species. MEP should file the results of that consultation, as well as any associated survey reports, with the Secretary prior to construction.**

3.8 LAND USE, RECREATION AND SPECIAL INTEREST AREAS, AND VISUAL RESOURCES

3.8.1 Land Use

As described in Section 2.0, the proposed Midcontinent Express Pipeline Project would consist of approximately 506.1 miles of new 30-, 36-, and 42-inch-diameter natural gas pipeline; an approximately 4.2-mile-long, 16-inch-diameter lateral pipeline; a total of approximately 111,720 hp of compression at one booster and four new compressor stations; and associated ancillary facilities. In this section, we further quantify the land requirements for construction and operation of the proposed Project, describe the current use of those lands, and evaluate the significance of Project-related impacts to those lands.

3.8.1.1 Land Requirements and Existing Cover Types

Seven general land use types would be affected by the proposed Project: agricultural, pine plantation, forest, open land, residential, open water, and industrial/commercial. Table 3.8.1-1 defines these general land use types and summarizes the acreage of each that would be affected by construction and operation of the proposed Project.

Construction of the proposed Project would affect a total of approximately 8,310.3 acres of land (Table 3.8.1-1). Approximately 72.3 percent of that acreage would be contained within the pipeline construction right-of-way and construction work areas associated with the proposed aboveground facilities. Approximately 40.5 percent of the total land that would be affected during construction is characterized as forestland other than pine plantation, 24.0 percent is open land, 15.6 percent is agricultural land, and 8.1 percent pine plantation. The remaining land use types reported in Table 3.8.1-1 each represent less than 2 percent of the proposed construction acreage. Following construction, lands impacted by the temporary right-of-way pipe storage and contractor yards, extra workspace areas, and most construction access roads would be allowed to revert to their original use and land use type.

During operation of the proposed Project, the permanent pipeline right-of-way and the acreage affected by the aboveground facilities and extra work areas would encumber about 3,158.3 acres. About 46.2 percent of the land that would be affected during operation is currently classified as non-pine plantation forested land, 24.1 percent is open land, 16.7 percent is agriculture, and 9.5 percent is pine plantation. The remaining land use types each represent less than 2 percent of the acreage required during operation.

Pipeline Facilities

MEP originally proposed a nominal construction right-of-way width of 100 to 125 feet along upland sections of the proposed mainline pipeline that would be installed using conventional, open-cut

trenching techniques (see Section 2.3.1). However, in accordance with our recommendation in Section 2.2 of the Draft EIS, MEP has reduced the nominal construction right-of-way width along all sections of the proposed Project mainline to 100 feet. The typical construction right-of-way width for the CenterPoint Lateral would be 75 feet. In wetland areas, the typical construction right-of-way width would be reduced to 75 and 60 feet for the mainline and CenterPoint Lateral pipeline facilities, respectively, unless site-specific variances were issued. As detailed in Section 2.2, additional construction areas, or temporary extra workspaces, would also be required for construction at road crossings, railroad crossings, crossings of existing pipelines and utilities, wetland and waterbody crossings, and other areas where specialized construction techniques would be used, these extra workspaces are included in Appendix H. Approximately 48.7 percent of the 8,208.1 acres that would be contained within the pipeline construction right-of-way and extra work areas, as proposed, consist of pine plantation and forestland. Agricultural and open lands account for an additional 39.5 percent of this acreage.

Following construction, the Project would generally retain a 50-foot-wide permanent right-of-way for operation of the pipeline. MEP initially proposed to maintain a 60-foot-wide permanent right-of-way along approximately 69.2 miles (25.9 percent) of the proposed 42-inch-diameter pipeline facilities. However, in accordance with our recommendation in Section 2.2 of the Final EIS, MEP would limit the permanent pipeline right-of-way width acquired through the condemnation process (see Section 3.8.2), if necessary, to 50 feet. In wetland areas, the maintained portion of the permanent pipeline right-of-way would be reduced to 30 feet in width. Acreage located within the construction right-of-way, but outside the permanent right-of-way, and the acreage associated with extra workspace areas, would be allowed to revert to its preconstruction use and cover type. As such, operation of the proposed pipeline would permanently encumber approximately 3,143.6 acres of land (Table 3.8.1-1), as proposed. Similar to the construction right-of-way requirements, approximately 55.7 percent of that acreage would consist of forested areas composed of pine plantation and forest, with agricultural and open lands accounting for an additional 42.0 percent of the affected acreage.

As described in Section 2.2, the proposed Project mainline would be collocated with existing pipeline and utility rights-of-way for approximately 259.8 miles (approximately 51.3 percent) of its length, and the proposed Project construction right-of-way would overlap existing rights-of-way by 10 to 20 feet along about 144.1 miles of that length. Additionally, about 3.1 miles (approximately 73.8 percent) of the CenterPoint Lateral would be collocated with existing rights-of-way.

Aboveground Facilities

The proposed Project would include construction and operation of four compressor stations, one booster station, 14 meter stations, 33 mainline valves, and nine pig launcher/receiver facilities. Three of the proposed meter stations, the NGPL No. 1, ETC, and CGT Interconnects, would be sited within the fenced boundary of existing abovground facilities to minimize land requirements. All mainline valves would be located within the permanent right-of-way or within the confines of proposed meter stations and/or compressor stations. Similarly, multiple pig launcher/receiver facilities would be located within the confines of proposed meter stations and/or compressor stations to minimize the permanent conversion of lands required for operation of those facilities (see Section 2.2 and Table 2.1-2).

Table 3.8.1-1 details the land cover types that would be affected by construction and operation of the proposed aboveground facilities, and the locations of the various aboveground facilities are depicted in maps provided as Appendix B of this EIS. The land requirements for the proposed aboveground facilities would total 102.2 acres during construction and 78.7 acres for Project operation. Approximately 39.7 percent of construction acreage is currently classified as pine plantation or forest, and an additional

TABLE 3.8.1-1
Acres Potentially Affected by the Proposed Midcontinent Express Pipeline Project[a]

Facility or Parish/County	Agricultural Land		Forest Land		Pine Plantation		Open Land		Residential Land		Industrial/ Commercial		Open Water		TOTAL	
	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.
Mainline Facilities[b]																
Bryan County, OK	0.0	0.0	14.1	6.2	0.0	0.0	82.4	41.9	1.1	0.6	0.0	0.0	0.0	0.0	97.6	48.7
Fannin County, TX	27.8	13.9	0.6	.03	0.0	0.0	53.8	27.3	0.0	0.0	0.0	0.0	0.0	0.0	82.1	41.5
Lamar County, TX	79.6	39.7	94.9	46.2	0.0	0.0	351.2	177.1	1.6	0.9	0.6	0.3	0.0	0.0	527.9	264.2
Red River County, TX	33.3	16.7	2.2	1.5	0.0	0.0	1.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0	37.4	19.5
Franklin County, TX	5.1	2.5	35.2	19.6	0.0	0.0	38.0	20.2	2.0	1.0	0.0	0.0	0.7	0.5	81.0	43.8
Titus County, TX	18.1	9.1	53.8	30.0	0.0	0.0	153.5	78.0	2.0	1.0	0.0	0.0	0.0	0.0	227.5	118.1
Morris County, TX	6.4	3.1	46.7	22.0	0.0	0.0	62.6	32.7	3.9	2.0	0.0	0.0	0.0	0.0	119.6	59.8
Cass County, TX	0.0	0.0	251.0	126.6	58.7	30.8	156.5	81.6	5.8	3.4	0.0	0.0	0.0	0.0	471.9	242.3
Caddo Parish, LA	10.7	5.4	83.3	43.5	29.3	15.7	30.5	15.4	0.0	0.0	0.0	0.0	0.0	0.0	153.8	80.0
Bossier Parish, LA	4.3	2.1	106.4	59.0	90.8	48.2	70.0	35.8	0.0	0.0	0.1	0.0	0.0	0.0	271.5	145.2
Webster Parish, LA	0.0	0.0	87.0	51.3	27.7	16.5	20.9	12.7	15.2	8.3	0.0	0.0	0.0	0.0	150.7	88.8
Claiborne Parish, LA	0.0	0.0	194.9	110.5	112.8	64.9	21.3	12.0	4.5	2.4	4.9	2.5	0.0	0.0	338.5	192.2
Lincoln Parish, LA	0.0	0.0	137.8	78.0	0.7	0.4	31.4	18.3	6.3	3.3	0.5	0.3	0.0	0.0	176.7	100.2
Union Parish, LA	4.9	2.6	199.8	114.1	66.9	35.7	47.7	25.9	3.2	1.6	0.0	0.0	0.0	0.0	322.5	179.6
Ouachita Parish, LA	32.4	18.3	32.6	16.3	40.2	20.1	6.8	3.4	3.1	1.6	0.0	0.0	0.0	0.0	115.0	59.6
Morehouse Parish, LA	74.0	37.8	39.3	22.2	0.0	0.0	2.0	1.1	3.8	2.0	0.0	0.0	0.0	0.0	119.0	63.1
Richland Parish, LA	138.4	71.7	40.8	24.0	0.0	0.0	26.8	13.5	0.0	0.0	1.5	0.8	0.0	0.0	207.5	110.0
Madison Parish, LA	372.7	173.2	46.8	20.5	0.0	0.0	27.0	16.9	0.5	0.3	0.0	0.0	5.3	2.7	452.3	213.5
Warren County, MS	13.3	6.6	120.3	60.9	0.0	0.0	15.9	8.1	0.0	0.0	0.0	0.0	0.0	0.0	149.5	75.6
Hinds County, MS	94.4	47.4	176.2	90.5	17.0	8.5	95.4	47.5	3.0	1.5	0.0	0.0	0.0	0.0	386.0	195.4
Rankin County, MS	33.4	16.5	225.9	113.6	1.9	0.9	53.0	26.5	3.2	1.5	0.0	0.0	0.0	0.0	317.4	159.2
Simpson County, MS	2.2	1.2	119.9	60.1	3.8	1.9	12.9	6.5	0.0	0.0	0.0	0.0	0.0	0.0	138.9	69.7
Smith County, MS	1.4	0.8	177.3	90.7	10.7	3.8	54.8	28.7	1.6	0.8	0.0	0.0	0.0	0.0	245.7	124.7
Jasper County, MS	1.1	0.6	190.9	97.1	33.6	16.8	77.7	38.3	0.0	0.0	0.0	0.0	0.0	0.0	303.2	152.8
Clarke County, MS	16.5	8.3	237.8	121.2	27.7	14.0	42.8	21.7	0.2	0.1	0.0	0.0	0.0	0.0	325.0	165.3
Choctaw County, AL	0.0	0.0	41.4	20.7	11.1	5.5	14.1	7.1	0.0	0.0	0.0	0.0	0.0	0.0	66.5	33.3
Subtotal Mainline Facilities	967.0	477.4	2756.6	1446.7	532.8	283.5	1550.6	799.6	61.1	32.0	7.6	3.9	6.0	3.2	5884.6	3046.3
Lateral Facilities[b]																
Richland Parish, LA	4.9	3.3	0.0	0.0	0.0	0.0	2.8	1.9	0.0	0.0	0.3	0.2	0.0	0.0	8.0	5.4
Madison Parish, LA	4.0	3.1	0.0	0.0	2.4	1.8	9.8	8.4	0.0	0.0	0.0	0.0	0.0	0.0	16.3	13.3
Subtotal Lateral Facilities	9.0	6.4	0.0	0.0	2.4	1.8	12.6	10.3	0.0	0.0	0.3	0.2	0.0	0.0	24.3	18.6

TABLE 3.8.1-1 (continued)
Acres Potentially Affected by the Proposed Midcontinent Express Pipeline Project[a]

Facility or Parish/County	Agricultural Land		Forest Land		Pine Plantation		Open Land		Residential Land		Industrial/ Commercial		Open Water		TOTAL	
	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.
Aboveground Facilities[c]																
Lamar Compressor Station	16.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0	15.0
Atlanta Compressor Station	0.0	0.0	12.2	11.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	11.7
Perryville Compressor Station	0.0	0.0	0.0	0.0	16.9	13.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.9	13.7
Delhi Booster Station	16.5	15.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5	15.9
Vicksburg Compressor Station	11.9	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	11.2
Enogex Interconnect	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3
NGPL Interconnect No.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	0.0	0.0	1.4	0.3
ETC Interconnect	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	0.0	0.0	1.4	0.3
NGPL Interconnect No. 2	0.0	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
TGT Interconnect	0.0	0.0	0.0	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
ANR Interconnect	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
CEGT Interconnect	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
CGT Interconnect and Meter Station	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3
TETCO Interconnect	0.0	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
SONAT Interconnect	0.0	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
TGP Interconnect	0.0	0.0	0.0	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
Destin Interconnect	0.0	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
Transco Interconnect	0.0	0.0	6.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.3
Pig Launcher/Receiver Facilities	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.8	7.5
Subtotal Aboveground Facilities	45.4	42.3	21.9	13.3	18.7	14.4	2.4	0.6	0.0	0.0	3.1	0.6	0.0	0.0	102.2	78.7
Extra Work Areas																
Pipe Storage and Contractor Yards	--	--	--	--	--	--	--	--	--	--	--	--	--	--	465.2	0.0
Extra Workspace	273.6	0.0	589.3	0.0	117.6	0.0	432.2	0.0	20.7	0.0	1.1	0.0	0.0	0.0	1,434.5	0.0
Access Roads	--	--	--	--	--	--	--	--	--	--	--	--	--	--	399.5	14.7
Subtotal Extra Work Areas	273.6	0.0	589.3	0.0	117.6	0.0	432.2	0.0	20.7	0.0	1.1	0.0	0.0	0.0	2,299.2	14.7
Total	1,297.9	526.2	3,367.7	1,459.9	671.6	299.7	1,997.7	810.5	81.1	32.0	12.1	4.7	6.0	3.2	8,310.3	3,158.3

Notes:
[a] Acreages reflected in this table may differ from reported acreage values in the text due to differences in rounding.
[b] Acreage for the mainline pipeline reflects a nominal 100--foot-wide construction right-of-way through uplands and a 75-foot-wide construction right-of-way through wetlands.
[c] Minor land requirements associated with MLVs would be contained entirely within other aboveground facilities or the construction and permanent pipeline rights-of-way and are thus already included in the acreage estimates for those facilities.

46.8 percent is currently classified as agricultural or open land. Operation of the proposed aboveground facilities would result in a conversion of those lands to a commercial/industrial cover type for the life of the proposed Project.

Access Roads

Where feasible, MEP would use existing public roadways, existing private roadways, and/or the pipeline right-of-way itself to gain access during construction and operation of the proposed Project. MEP has indicated that construction of the proposed Project would require the temporary use of three new and 155 existing access roads (private roads, drives, lanes, and other roads) of varying lengths and construction, comprising a length of approximately 109.9 miles. MEP reports that upgrades (grading, placement of gravel for stability, topping with board matting, and clearing of overhead vegetation) could be required for all but 10 existing roadways. Similarly, construction of the two new access roads would entail grading, compaction, and placement of gravel. Assuming an average width of 30 feet, use of existing access roads and associated improvements would temporarily affect 399.5 acres during construction (Table 3.8.1-1). Table H-2 in Appendix H provides a listing of the access roads that would be used during construction. These roads are also depicted on the facility location maps provided in Appendix B of this EIS.

In addition to temporary use of existing and new access roads along the proposed pipeline right-of-way during construction, construction of permanent access roads would also be required to provide a means of ingress and egress to the proposed compressor and meter station facilities during operations. The construction and operational access road land requirements of the compressor station access roads are already accounted for in the land requirements reported for those facilities. Fifteen access roads comprising a length of approximately 4.0 miles and encumbering approximately 14.6 acres would be retained during operations to provide access to the proposed meter station facilities. The permanent access road constructed at each of these facilities would generally consist of a single, 15- to 25-foot-wide, gravel or paved roadway of the length required to provide access to the nearest public roadway.

Pipe Storage and Contractor Yards

MEP has proposed the temporary use of 29 pipe storage and contractor yards during construction, but also indicates that additional pipe storage and contractor yards could be required during construction. Each of the identified yards would consist of warehouses or open lots located in areas of existing commercial or industrial use or in open or agricultural lands. Land requirements for these facilities would total approximately 465.2 acres (Table 3.8.1-1). The general locations of these facilities are depicted in the facility location maps provided as Appendix B of this EIS and Appendix H-3. All yards would be leased from willing landowners, and upon completion of construction activities, the proposed pipe storage and contractor yards would be returned to their preconstruction condition and former usage. If additional pipe storage and contractor yards were required, MEP has indicated that it would use previously disturbed and/or industrial lands for those facilities to the maximum extent practicable. Prior to construction, MEP would be required to file a complete and updated list of all temporary workspace areas, including pipe storage and contractor yards, with the FERC for review and approval prior to use.

3.8.1.2 General Impacts and Mitigation

Land use impacts occur when acreage is encumbered by an easement and when defining vegetative communities are altered during Project operation and/or construction (e.g., when trees are cleared from forested lands resulting in conversion to open land). The magnitude of land use conversion depends upon multiple factors including the vegetative community recovery time, post-construction restoration methods, and allowable post-construction activities. Section 2.3 provides a detailed discussion

of the proposed construction methods and post-construction restoration actions for the proposed Project that would dictate the magnitude of land use conversion and the rate of recovery.

Following construction, areas outside of the permanent pipeline right-of-way and aboveground facilities would be graded, seeded, or otherwise restored and allowed to revert to approximate preconstruction conditions, except where individual landowner agreements negotiated during the easement acquisition process dictate other acceptable restoration measures. As a result, land use impacts to these areas would be temporary. Because non-woody vegetation would be expected to return to preconstruction conditions within one to two growing seasons, impacts to lands currently classified as agricultural, pasture, commercial/industrial, or open land located outside the permanent pipeline right-of-way would be short term and minor. Forested areas cleared within the temporary construction right-of-way and extra work areas, would be allowed to revert to preconstruction condition and in some cases trees may be replanted. Mature trees would take many years to reestablish, with the duration of recovery dependent on the type and age of trees removed. As a result, construction impacts to areas classified as forest and pine plantation would be long-term. However, given the prevalence of these land use types in the affected counties/parishes, such impacts would not be significant. Additional discussion of general impacts and mitigation measures that would be implemented in forested areas is provided in Sections 3.4 and 3.5. Sections 2.0 and 4.0 also discuss measures to avoid and minimize effects to sensitive land use types through route selection, collocation, and the minimization of construction right-of-way land requirements.

Permanent land use conversion would occur to those lands within the permanent pipeline right-of-way where reversion to the preconstruction land use would not be compatible with operation of the proposed Project. Land uses not allowed in the permanent pipeline right-of-way would include aboveground construction; below ground construction; and the growth, planting, or cultivation of trees. Forest and pine plantation land covers would therefore be precluded from the permanent pipeline right-of-way. Allowable land uses generally permitted within the permanent right-of-way would include agriculture, including the use of farming equipment and the cultivation of row crops, and pastureland. Permanent changes to land cover would also be associated with the proposed aboveground facilities, as the acreage required for these facilities would be converted to a commercial/industrial land use for the life of the Project. Although these impacts would be permanent, lasting for at least the life of the Project, the overall impact would not be significant given the limited acreage involved.

3.8.1.3 Site-specific Impacts and Mitigation to Specific Land Uses

Construction of the proposed Project could affect the productivity of agricultural, timber, and pasture lands within the construction and permanent pipeline rights-of-way. MEP proposes to accomplish pipeline construction between August 2008 and February 2009, which would encompass a portion of the typical growing season. Thus, Project-related crop losses would likely occur. As applicable, MEP would work with landowners prior to construction to establish compensation agreements for crop damages and for crop productivity loss. In accordance with MEP's Plan, MEP would implement special construction procedures in agricultural areas to minimize potential impacts to crop yield and restore the right-of-way to approximate preconstruction conditions (see Sections 2.3 and 3.2). Follow up inspections of disturbed areas would also be conducted after the first and second growing seasons to determine whether revegetation efforts were successful. In agricultural areas, revegetation would be considered successful if crop yields were similar to adjacent, undisturbed areas (see Section 3.2).

During the pre-filing, scoping, and Draft EIS comment periods, we received comments expressing concern for potential Project-related effects on pastureland, livestock grazing, and livestock watering during construction. As described above, MEP would implement special construction and monitoring procedures in agricultural lands, including pastureland, to minimize adverse effects and ensure

proper restoration. However, pastureland disturbed by construction could take several years to return to preconstruction levels of production. In addition, construction through pastureland could temporarily affect some livestock operations, and some landowners could incur additional costs for supplemental livestock feed. Compensation for such losses would be accomplished through the easement negotiation process. To ensure the safety of livestock during construction, MEP would either construct temporary fencing to keep livestock away from construction areas or develop a grazing deferment plan in accordance with MEP's Plan. MEP would restore any watering and feeding facilities temporarily encumbered by construction actions. Special livestock watering measures that would be implemented during construction would typically be agreed upon during easement negotiations.

As discussed in Section 3.8.1.2, impacts to forest lands and pine plantation would range from long-term in areas outside the permanent pipeline right-of-way to permanent for areas within the permanent pipeline right-of-way and at the proposed aboveground facilities. As such, timber production within the construction and permanent rights-of-way would be temporarily reduced or permanently precluded, respectively. MEP would negotiate with affected landowners to obtain an easement agreement that eliminates timber production within the permanent pipeline right-of-way. Compensation for any losses or limitations on future timber production values within the construction and permanent pipeline rights-of-way would be addressed during those easement negotiations. Further, MEP could increase the depth of pipeline cover to eliminate the use of matting to cross the pipeline with forestry equipment. Increased pipeline cover depths in these areas would also be addressed during easement negotiations.

We received a comment during the Draft EIS comment period regarding the installation of access barriers along the Project right-of-way in forested lands to prevent access by recreational vehicles. As required by the Plan, at the request of landowners of forested lands, MEP would install and maintain signs, fences with locking gates, slash and timber barriers, and/or would plant appropriate trees or shrubs to block off-road vehicle access to the right-of-way. MEP would coordinate with affected landowners regarding the installation of access barriers on their property and ensure adequate landowner access.

Appropriate landowner settlements, special construction measures, restoration, and post-construction monitoring would ensure that landowners are able to resume preconstruction activities within temporary construction easements or that construction impacts would be mitigated. Further, settlement negotiations would ensure that property owners are fairly compensated for any loss of revenue associated with construction or operation of the proposed Project.

3.8.1.4 Land Ownership and Easement Requirements

During the pre-filing, scoping, and Draft EIS comment periods, we received several comments regarding the easement acquisition process for the proposed Project. Prior to initiating construction, MEP would secure an easement to convey both temporary (for construction) and permanent (for operation) rights-of-way. The easement acquisition process is designed to provide fair compensation to the landowners for the right to use the property for pipeline construction and operation. During the easement acquisition process, MEP would compensate landowners for loss of value to specific parcels. The easement agreement between the company and landowner typically specifies compensation for loss of use during construction, loss of nonrenewable or other resources, damage to property during construction, and allowable uses of the permanent right-of-way after construction. During negotiations, MEP and affected landowners would address the following:

- allowable uses within the right-of-way;
- compensation for the lost value of future timber production;

- mechanisms required to allow the pipeline to be traversed by heavy equipment such as log skidders; and
- minor route adjustments to accommodate landowner needs (provided that the route adjustments do not affect environmentally sensitive areas or other non-consenting landowners).

If an easement cannot be negotiated with a landowner and the proposed Project has been certificated by the FERC, MEP could use the right of eminent domain granted to it under Section 7(h) of the NGA and the procedure set forth under the Federal Rules of Civil Procedure (Rule 71A) to obtain the right-of-way and additional temporary workspaces. Although MEP would compensate the landowner for the right-of-way and for any damages incurred during construction, a court would determine the level of compensation if a Certificate was issued. In either case, the landowner would be compensated for the use of the land. Eminent domain would not apply to lands under federal ownership.

3.8.1.5 Existing Residences and Planned Developments

The proposed pipeline would traverse primarily rural, unincorporated areas, thereby avoiding most residential areas. However, approximately 81.1 acres of land classified as residential would be contained within the construction right-of-way or additional temporary workspaces, and 32.0 of those acres would be contained within the permanent right-of-way. A total of 33 residential structures would be located within the 50 feet of proposed construction work areas (Table 3.8.1-2).

TABLE 3.8.1-2
Residences and Businesses within 50 feet of Construction Work Area for the Proposed Midcontinent Express Pipeline Project

Milepost	County/Parish, State	Distance from Construction Work Area (feet)	Distance from Pipeline Centerline (feet)
TX 2.5[a]	Fannin, TX	25	90
TX 15.7[a]	Lamar, TX	25	50
TX 56.1	Franklin, TX	30	100
TX 68.0[a]	Titus, TX	25	45
TX 90.0[a]	Cass, TX	25	80
TX 90.0[a, b]	Cass, TX	25	25
TX 114.0[a]	Cass, TX	25	60
TX 116.8[a]	Cass, TX	25	35
LA 37.0	Webster, LA	30	80
LA 74.4[a]	Claiborne, LA	25	55
LA 85.4[a]	Lincoln, LA	25	50
LA 85.4[a]	Lincoln, LA	25	50
LA 85.5[a]	Lincoln, LA	25	130
LA 85.6	Lincoln, LA	35	115
LA 85.7	Lincoln, LA	50	200
LA 85.8[a]	Lincoln, LA	25	60

TABLE 3.8.1-2 (continued) Residences and Businesses within 50 feet of Construction Work Area for the Proposed Midcontinent Express Pipeline Project			
Milepost	**County/Parish, State**	**Distance from Construction Work Area (feet)**	**Distance from Pipeline Centerline (feet)**
LA 100.2	Union, LA	43	158
LA 123.0	Ouachita, LA	31	110
LA 123.0	Ouachita, LA	36	75
LA 123.0[a]	Ouachita, LA	25	80
MS 4.0	Warren, MS	50	85
MS 4.1[a]	Warren, MS	25	48
MS 35.6	Hinds, MS	40	155
MS 42.9	Hinds, MS	24	114
MS 52.8	Rankin, MS	26	83
MS 67.0	Rankin, MS	44	159
MS 67.1	Rankin, MS	31	121
MS 71.9	Simpson, MS	31	81
MS 72.1	Simpson, MS	50	100
MS 83.1	Smith, MS	50	100
MS 85.8	Smith, MS	32	97
MS 90.2	Smith, MS	42	157
MS 95.5	Smith, MS	50	146
MS 109.4	Jasper, MS	31	121
Businesses			
LA 59.4[a]	Claiborne, LA	25	52
LA 59.9[a]	Claiborne, LA	25	25

Notes:
[a] A site-specific plan has been developed for this residence.
[b] MEP proposes to bore past the house in this location to minimize impacts.

To minimize disruptions to residential areas near construction work areas, MEP would attempt to coordinate construction work schedules with affected landowners prior to starting construction. To further minimize impacts to residential areas within the vicinity of construction work areas, MEP would implement the following measures on an as-needed basis:

- ensure that pipeline installation is completed as quickly as practicable to minimize the construction period in residential areas;
- maintain access to all residences, especially for emergency vehicles, at all times;
- where necessary, install temporary safety fencing to control access and minimize the hazards associated with an open trench;
- preserve landscaping and mature trees as much as practicable;

- restore landscaping and lawns within the construction work area according to the Plans and Procedures or landowner agreement;
- use dust suppression measures, as needed, in the immediate area during active construction;
- repair any damages to residential property that result from construction activities or provide compensation at fair market value; and
- restore all areas disturbed by construction work areas to "as before or better" conditions.

In addition, MEP has prepared site-specific plans for those residences and businesses located within 25 feet of the construction work area, to minimize impacts to these structures. We have reviewed these plans and find them to be acceptable.

We received several comments during the pre-filing, scoping, and Draft EIS comment periods indicating that the proposed Project route could interfere with plans for construction of homes or other structures. In Section 4.4, we evaluate several route variations that were identified in response to specific landowner requests. During the easement negotiation process, minor reroutes to the proposed Project pipeline alignment could also be made in accordance with landowner requests, if they do not impact significant environmental resources or other landowners.

Prior to construction, MEP would consult with the owners of all structures located within the construction work area, as part of the easement negotiation process, to develop a route or mitigation plan that would minimize impacts to those structures. If a minor reroute could not fully avoid the structures, MEP would relocate or replace the structures, or otherwise compensate the affected landowner per the terms of the agreement negotiated during the easement acquisition process. As discussed in Section 4.0, MEP has evaluated or adopted multiple route variations designed to minimize residential impacts. Based upon MEP's site-specific residential plans, the adherence to residential construction measures outlined in the Plan and Procedures, and the adoption of route variations to minimize impacts to residential structures, we believe that Project-related impacts to residences have been adequately minimized.

During the Project planning stages, MEP consulted with county and parish planning agencies and reviewed development plans to identify currently filed proposals for residential and commercial developments adjacent to the proposed construction right-of-way or associated aboveground facilities. We received two comment letters indicating that the proposed Project route would cross two planned residential developments: the Castle Glen development in Warren County, Mississippi, at MP MS 4.5; and the Twin Lakes Estates development, in Terry, Mississippi, at MP MS 34.7. The Twin Lakes Estates development has been recorded in the Mississippi public record, while the Castle Glen development has not been officially filed with applicable local agencies. MEP is consulting with the developers of the Twin Lakes Estates and Castle Glen regarding potential Project-related effects to those properties. We have recommended in Section 4.0 that MEP adopt a route variation that would avoid most of the interior of the Twin Lakes Estates; therefore, Project-related impacts to this development would largely be minimized. To minimize impacts to the proposed Castle Glen development, MEP proposes to parallel and overlap the existing Entergy electric transmission right-of-way in that area to reduce the construction and operational Project land requirements outside of the existing right-of-way. Entergy is currently evaluating the feasibility of MEP's proposed easement and is anticipated to inform MEP of the maximum allowable encroachment in May 2008.

During the Project scoping period, the State of Louisiana identified a 1,400 acre "mega-site" located in Richland Parish, Louisiana, at MP LA 146.8. In an effort to attract industry to the northeast Louisiana region, the Louisiana Economic Development Department is promoting the mega-site to industrial manufacturers. As shown in Appendix J, MEP adopted a route variation that was recommended by the State of Louisiana to minimize impacts to the development of this property by

avoiding the central portion of the parcel and traversing the northern edge of the property. The State of Louisiana filed a letter with the FERC on March 20, 2008, (see appendix M) indicating that the proposed Project alignment around the site is acceptable. MEP is continuing consultations with the State of Louisiana in regards to appropriate pipe wall thickness in this area.

The City of Vicksburg and the Rainbow and Riverwalk Casinos expressed concerns regarding Project-related safety issues and the potential for the Project to impede future casino development and expansion along the southern Vicksburg-Warrenton Road/Route 61 development corridor. Further, Mississippi Bluffs Development, LLC (Mississippi Bluffs) commented that the Project would impede future casino and golf course development on their property, which is located in south Vicksburg. MEP confirmed that the proposed Project route would avoid property owned by Rainbow Casino, but it would traverse property owned by Mississippi Bluffs. MEP met with officials from the City of Vicksburg and representatives from the Rainbow and Riverwalk Casinos to discuss Project-related safety concerns in the area of existing and planned casino development. To address those concerns, MEP has indicated that it would upgrade the class designation of the proposed Project pipeline in the area around the casinos from Class 1 to Class 3, which would require that the pipe wall thickness and pipeline design pressure, hydrostatic test pressures, MAOP, inspection and testing of welds, and frequency of pipeline patrols and leak surveys conform to higher standards (see Section 3.12). In addition and as described in Section 3.12, MEP would establish and maintain liaison with appropriate local fire, police, and public officials to establish an emergency plan that includes procedures to minimize the hazards in the event of a natural gas pipeline emergency.

MEP adopted a route variation near Mississippi Bluffs that would shift the Project alignment south to collocate with Gulf South's East Texas to Mississippi Project, which is currently being constructed. As a result, the proposed Project route would traverse approximately 1,280 feet along the southern property boundary of the Mississippi Bluffs to minimize impacts to any future development plans. Upon further consultation, Mississippi Bluffs indicated that they were no longer planning to construct a casino and golf course at the site. MEP does not propose any additional minimization measures due to Mississippi Bluffs' change in development plans for the property.

Given implementation of the residential and commercial property impact minimization measures described above in conjunction with adoption of route variations and development of site-specific construction plans, we believe that adverse impacts to existing residents and planned developments within the Project area would be sufficiently minimized.

3.8.1.6 Recreation and Special Interest Areas

Levee Crossings

The proposed Project would cross levees managed by the Caddo Levee District (Red River), Tensas Basin Levee District (Ouachita River), and the 5th Louisiana Levee District (Mississippi River). These levees provide flood control and augment Louisiana and Mississippi's system of waterborne recreation and transportation. MEP is consulting with the Caddo, Tensas Basin, and 5th Louisiana Levee Districts, as well as the Louisiana Levee Board, Louisiana Department of Transportation, and the COE to determine applicable levee crossing permit requirements. The Mississippi River crossing, where boring under the levees with HDD would not be permissible, MEP proposes to install the proposed Project pipeline across the surface of the levee, using impervious earthen fill as pipe cover. After pipeline placement, the levee crown would be surfaced and MEP would restore the embankments according to applicable permit conditions and regulations.

MEP indicates that site-specific levee crossing plans would be developed during the detailed Project engineering design phase and filed with appropriate regulatory agencies. These agencies would review MEP's levee crossing plans, and if approved, issue levee crossing permits prior to the start of construction. However, MEP has not yet developed site-specific levee crossing plans, and no agencies have issued permits authorizing the proposed levee crossings. Therefore, **we recommend that:**

- **Prior to construction across any levee managed by the Caddo, Tensas Basin, and 5th Louisiana Levee Districts; the Louisiana Levee Board; the Louisiana Department of Transportation; and the COE, MEP should file with the Secretary the applicable levee crossing permits and authorizations.**

Scenic Byways

The proposed Project route would cross two national scenic byways, the Natchez Trace Parkway (MP MS 26.0) and the Lower Mississippi Byway (MP MS 1.5), and four state scenic byways, the Bienville Trace (MP LA 109.6, MP LA 112.0, MP LA 117.3, MP LA 158.0, MP LA 164.9, MP LA 176.6, and MP CL 0.5); Northwest Louisiana Scenic Byway (MP LA 0.9, MP LA 20.9, MP LA 30.0, MP LA 37.0, MP LA 48.3, MP LA 53.0, and MP LA 63.3); and the Grand Gulf-Raymond Scenic Byway (MP MS 29.5), as shown in Table 3.8.1-3.

In Louisiana, the Project would cross multiple highways comprising the Bienville Trace Byway and the Northwest Louisiana Scenic Byway (formerly the Bienville Trace II Byway). These state byways consist of a network of roadways that showcase the state's outstanding historical, natural, recreational, or archeological features. In total, the proposed Project route would entail 13 separate crossings of highways comprising the Bienville Trace and Northwest Louisiana Scenic Byways in Caddo, Bossier, Webster, Claiborne, Lincoln, Richland, and Madison Parishes, Louisiana. All crossings would be accomplished via subsurface boring techniques. MEP indicates that a majority (i.e., nine) of these proposed crossings would be collocated with existing rights-of-way or located within open or agricultural land use areas, which would avoid the creation of new rights-of-way within the viewscape of these byways. At those crossings containing forested lands that are not collocated with existing rights-of-ay, it is anticipated that views of the cleared Project right-of-way be limited to brief observations of passing motorists. As a result, the visual impact of the permanent pipeline corridor would be minor.

The proposed Project route would also cross the Mississippi State administered Grand Gulf-Raymond Scenic Byway in Hinds County, Mississippi. The Grand Gulf-Raymond Byway is a 50-mile-long route that is typically collocated with State Route 18 and highlights the area's historical features. The Project would cross the Grand-Gulf Raymond Byway at approximately Project MP MS 29.5, and as proposed, the crossing would be accomplished via subsurface boring techniques. The western side of this crossing would be located within open and agricultural lands that would not require extensive vegetative clearing resulting in a permanent visual impact. The eastern side of the Grand-Gulf Raymond Byway crossing would be located in a forested area, and the cleared and maintained pipeline right-of-way would therefore be visible to passing motorists upon Project completion. Due to the brief period the Project right-of-way would be visible to byway travelers, it is not anticipated that the Project construction and operation would substantially degrade the visual character of the byway. Additionally, the federal scenic byways crossed by the proposed Project route include the National Parks Service administered Natchez Trace Parkway in Hinds County, Mississippi (MP MS 26.0), and the Lower Mississippi Byway in Warren County, Mississippi (MP MS 1.5). The Natchez Trace Parkway would be crossed from boundary to boundary via HDD, eliminating any potential Project-related visual impact there. Further discussion of potential Project-related impacts to the Natchez Trace Parkway is provided in Appendix I of this EIS. The Lower Mississippi Byway is the portion of the Great River Road that follows U.S. Route 61 for 101 miles, extending from the Louisiana-Mississippi state line to the Issaquena-Warren County line. The

crossing of the Lower Mississippi Byway would occur in a forested area and would be collocated with Gulf South's East Texas to Mississippi Project, which is currently under construction. The expansion of the cleared and maintained right-of-way associated with the East Texas to Mississippi Project would not be visually significant to passing motorists.

TABLE 3.8.1-3
National and State Scenic Byways Crossed by the Proposed Midcontinent Express Pipeline Project

Scenic Byway	Crossing Milepost	County/Parish	Crossing Method
Federal			
Lower Mississippi Byway			
	MP MS 1.5	Warren County	Bore
Natchez Trace Parkway[a]			
	MP MS 26.0	Hinds County	HDD
State			
Northwest Louisiana Scenic Byway			
	MP LA 0.9	Caddo Parish	Bore
	MP LA 20.9	Bossier Parish	Bore
	MP LA 30.0	Bossier Parish	Bore
	MP LA 48.3	Webster Parish	Bore
	MP LA 53.0	Claiborne Parish	Bore
	MP LA 63.3	Claiborne Parish	Bore
Bienville Trace Scenic Byway			
	MP LA 109.6	Lincoln Parish	Bore
	MP LA 112.0	Lincoln Parish	Bore
	MP LA 117.3	Lincoln Parish	Bore
	MP LA 158.0	Richland Parish	Bore
	MP LA 164.9	Madison Parish	Bore
	MP LA 176.6	Madison Parish	Bore
	MP CL 0.5	Madison Parish	Bore
Grand Gulf-Raymond Scenic Byway			
	MP MS 29.5	Hinds County	Bore

Notes:
[a] Parkway will be crossed boundary to boundary via HDD, eliminating surface impacts.

The Project would cross under the scenic byways via subsurface road bore or HDD; therefore, eliminating any direct impacts to the roadway surface, margins, and side slopes. As requested by the National Park Service, the Project would cross the Natchez Trace Parkway from boundary to boundary via HDD to avoid direct surface impacts to lands administered by the National Park Service. With the exception of the Natchez Trace Parkway, none of the other crossings of scenic byways would require special crossing permits, beyond the standard state and federal DOT requirements associated with general roadway crossings. Given the crossing of the Natchez Trace Parkway via HDD and the orientation of most scenic byway crossings within open/agricultural lands or adjacent to existing rights-of-way

combined with the minor visual impacts anticipated to passing motorists, we believe that the proposed Project crossings of scenic byways would result in less than significant impacts.

Nationwide Rivers Inventory

Streams included in the NRI, which is managed by the NPS, are considered to possess "outstandingly remarkable natural or cultural values judged to be of more than local or regional significance" (NPS 2007b). The proposed Project route would cross six NRI-listed streams: Bayou D'Arbonne (MP LA 90.6; LA 106.6), Bayou D'Loutre (MP LA 113.1), Big Black River (MP MS 12.7), Pearl River (MP MS 44.8), Strong River (MP MS 73.1), and Chickasawhay River (MP MS 137.8). Of these waterbodies, Bayou D'Arbonne and Bayou D'Loutre are also designated as Louisiana Natural and Scenic Rivers.

The NRI-listed reach of the Big Black River extends for 234 river miles above its confluence with the Mississippi River. The Big Black River is an unaltered stream that traverses bottom-land hardwood forests, and the river is recognized for its significant cultural and wildlife features (NPS 2007b). The Pearl River has been recognized for outstanding scenery, recreation, fisheries, and wildlife values. Habitat types found along the river include swampland, marsh, and cypress tupelo forest, which provide habitat to a variety of wildlife species. Additionally, the Pearl River provides habitat for several federally-listed threatened and endangered species. The NRI-listed reach of the Pearl River that is crossed by the proposed Project route extends from river mile 161, upstream of the city of Columbia, Mississippi, to river mile 312, 1 mile south of Jackson.

The NRI-listed reach of the Strong River extends approximately 72 river miles upstream from the confluence with the Pearl River The Strong River has been recognized for outstanding scenery, recreation, geological, and fish and wildlife value and provides habitat for federally-listed threatened and endangered species. The NRI-listed reach of the Chickasawhay River extends approximately 145 river miles upstream from its confluence with the Pascagoula River, and the Chickasawhay River has been recognized for the distinctive clay and limestone bluffs that occur along its banks. Further, the segment crossed by the Project also provides habitat for multiple federally-listed threatened and endangered species.

As described in Sections 2.0 and 3.3, MEP would use HDD installation techniques, in accordance with MEP's Procedures, to avoid and minimize impacts to Bayou D'Arbonne, Bayou D'Loutre, Big Black River, Chickasawhay River, Pearl River, and the Strong River and associated riparian and wetland habitats. Further, the proposed crossings of Bayou D'Loutre, the Big Black River, and the Strong River would be collocated with existing utility rights-of-way to further minimize impacts associated with the clearing of riparian vegetation. While no NPS permits are required for the crossing of NRI-listed waterways, MEP is consulting with the NPS to ensure that the proposed mitigation and avoidance measures would adequately minimize impacts to these waterbodies. In Section 3.3, we have also included a recommendation that requires MEP to address any additional mitigation measures recommended by the NPS prior to construction.

Given the crossing of these resources via HDD and our recommendation for further consultation with the NPS, we do not anticipate that construction of the proposed Project would result in a significant impact to any NRI-listed streams.

Louisiana Natural and Scenic Rivers

Three of the streams crossed by the proposed Project route, Dorcheat Bayou (MP LA 42.2), Bayou D'Arbonne (MP LA 106.6), and Bayou D'Loutre (MP LA 113.1), have been designated as

Louisiana Natural and Scenic Rivers, pursuant to the Louisiana Scenic Rivers Act. These streams are recognized as having unique and diverse characteristics, and are protected through management by the LDWF (LDWF 2007c).

Over 90 percent of Dorcheat Bayou has scenic value due a prevalence of unaltered, natural bottomland hardwood and cypress forested areas (LDEQ 2002). Dorcheat Bayou contains numerous cultural resource areas, and the stream also provides fish and wildlife habitat, as well as outstanding canoeing opportunities. As described above, Bayou D'Arbonne and Bayou D'Loutre, which are also NRI-listed streams, provide habitat for fish and wildlife in addition to the scenic viewing and recreational opportunities afforded by these streams.

As described in Sections 2.0 and 3.3, MEP would use HDD installation techniques, in accordance with MEP's Procedures, to avoid and minimize impacts to Dorcheat Bayou, Bayou D'Loutre, and Bayou D'Arbonne and associated riparian and wetland habitats. The proposed crossings of these waterbodies, as well as associated withdrawals and discharges of hydrostatic test water, would require approval from the LDWF. In October 2007, MEP submitted a Louisiana Natural and Scenic Rivers Permit application to LDWF that included site-specific crossing plans for each Louisiana Scenic River crossed. MEP and LDWF completed site visits at the proposed crossing locations in March of 2008. MEP has indicated that they would be revising the Louisiana Natural and Scenic River permit application based upon the results of the March, 2008, field visits. Because MEP has not yet filed the revised crossing permit application and has not received all approvals regarding potential Project-related effects to designated Louisiana Natural and Scenic Rivers, we included a recommendation in Section 3.3 that MEP file copies of all permits, approvals, or comments that may be obtained, including plans to address any additional mitigation measures recommended by the LDWF prior to the commencement of construction across these waterways.

Given the crossing of these waterways and their associated riparian areas via HDD, as well as those additional mitigation measures that may result from LDWF approval and permitting, we believe that construction of the proposed Project would not result in a significant impact to any designated Louisiana Natural and Scenic River.

Archusa Creek Water Park

The proposed Project route would traverse the Archusa Creek Water Park, which is administered by the Pat Harrison Waterway District (PHWD) and offers fishing, camping, and hiking opportunities in Clarke County, Mississippi (PHWD 2007). The proposed pipeline route would cross park lands for approximately 1,500 feet at MP MS 138.9. MEP proposes to cross the park approximately 350 feet from any designated recreational areas via open-cut trenching. MEP is currently negotiating an easement agreement with the PHWD and anticipates finalizing easement agreements in May of 2008. Because those negotiations are not yet complete, **we recommend that:**

- **MEP should consult with the PHWD regarding the proposed crossing of the Archusa Creek Water Park and file copies of any easement agreement, permits, approvals, or comments that may be obtained, including plans to address any additional mitigation measures recommended by the PHWD, with the Secretary prior to construction within Archusa Creek Water Park boundaries.**

Parkhouse II Reservoir

The TWDB has proposed development of the Parkhouse II Reservoir on the North Sulphur River in Lamar and Delta Counties, Texas. At the design capacity of 330,871 acre-feet of water, the reservoir

would inundate approximately 14,387 acres of land and provide a usable water supply of approximately 144,300 acre-feet per year. The proposed Project route would traverse lands that would be contained within the area flooded by the reservoir, if constructed. The state of Texas has not included construction of this reservoir in its 2007 or 50-year water plans. Further, the state legislature has not designated the proposed location of the reservoir as a unique reservoir site, and a final dam location has not been specified. Consultations with the TWDB indicate that the proposed Project would not conflict with future reservoir construction in the area.

Wildlife Management Areas

As described in Section 3.6, the Bodcau WMA is located in Bossier and Webster Parishes, Louisiana, and consists of a 34,355-acre site managed by the LDWF, in cooperation with the COE and a private corporation, primarily for the control of downstream flooding. Recreational use of this area includes hunting, fishing, boating, and camping. The proposed pipeline route would cross the Bodcau WMA for approximately 6,080 feet between MP LA 35.0 and MP LA 36.6. However, surface impacts to the majority of that distance would be avoided as MEP proposes to implement an HDD to cross approximately 2,640 feet of the WMA and the adjacent Bodcau Bayou. The remainder of the Bodcau WMA crossing would be accomplished via open cut. As depicted in Appendix J, MEP has adopted a route variation for the portion of the Bodcau WMA proposed to be crossed by open cut to minimize fragmentation of high quality forest. Hunting activity near the proposed construction work areas would be restricted temporarily during construction, but normal recreational use could resume once construction was complete. No impacts would be anticipated during operation of the proposed Project.

The proposed Project would also pass within 1,800 feet of the White Oak Creek WMA in Titus, Morris, Bowie, and Cass Counties, Texas. This 25,777-acre WMA is owned by the COE and managed by the TPWD to provide hunting, fishing, wildlife viewing, hiking, and horseback riding opportunities. Though no lands within the White Oak Creek WMA would be impacted by the Project, the proposed Project route would traverse the watershed that drains to the White Oak Creek WMA. MEP indicated that based on its consultations with the COE, TECQ, TPWD, and local water providers no special permit requirements or constraints on construction would be required.

We do not anticipate that construction and operation of the proposed Project would result in significant impacts to either the Bodcau or White Oak Creek WMAs, given implementation of the routing and construction practices proposed by MEP. However, use of Bodcau WMA lands would require prior approval by the COE. In Section 3.5 we have included a recommendation that MEP continue consultations with the COE and obtain all required approvals to authorize Project-related use and impacts to lands held in the Louisiana WMA program. As a result of those consultations, the COE may recommend measures to further avoid and minimize impacts to WMA lands.

FWS-Managed Lands and Easements

The FWS works with private landowners that voluntarily restore wetlands or other valuable wildlife habitats on their property by providing financial assistance from the federal government. MEP indicates that the proposed Project route would avoid all such FWS easement and fee-title tracts and parcels enrolled in FWS Partners for Fish and Wildlife Program.

Bayou D'Arbonne NWR is one of the refuges comprising the North Louisiana Refuge Complex. The 17,419 acre refuge provides bottomland hardwood, upland forested, and wetland habitat for numerous fish and wildlife species (FWS 2007k). The MEP pipeline would pass to the north of Bayou D'Arbonne NWR between MP LA 35.0 and MP LA 36.8, and as described in Section 4.0, MEP adopted a route variation to increase the linear distance between the Project crossing of Bayou D'Arbonne and the

NWR, as requested by FWS. Further, MEP proposes to cross Bayou D'Arbonne via HDD to minimize the potential for downstream impacts to the NWR.

The Tensas NWR comprises approximately 64,012 acres of woodlands, open water, wetlands, cropland, and converted agricultural lands in Richland and Madison Parishes, Louisiana (FWS 2007b). The Tensas NWR provides habitat for numerous fish and wildlife species, including several federally-listed threatened and endangered species such as the Louisiana black bear. The proposed Project would cross approximately 0.5 mile north of the refuge in Madison Parish, Louisiana, and would avoid direct impacts to refuge lands. Further, MEP proposes to cross the Tensas River via HDD minimizing the potential for downstream water quality degradation within the refuge.

The Red River National Wildlife Refuge Act granted the FWS the authority to acquire approximately 50,000 acres within a 120-mile long corridor along the Red River between Colfax, Louisiana, and the Arkansas state line (FWS 2007m). The objective of this acquisition is to provide migratory bird habitat and to protect and restore native plant and wildlife communities. To date, the FWS has acquired 6,000 acres of land in support of the refuge establishment. In their scoping comments on the Project, the FWS indicated that the proposed Project route may traverse lands targeted for future acquisition (FWS 2007h). Upon further consultation, the FWS determined that the proposed Project route would not cross any lands so targeted. At its closest point, the proposed Project route would be located approximately 1 mile from any lands contained within the Red River NWR.

Based on the adopted route variation that would minimize impacts to the Bayou D'Arbonne NWR and the avoidance of all other FWS-managed lands, we believe that the Project would not impact FWS-managed lands or easements.

USDA-Managed Lands

The CRP, WRP, GRP, and Prior Converted Wetlands program are voluntary programs administered by the NRCS and the FSA. The proposed Project would cross lands encumbered by the USDA-managed CRP, WRP, and Prior Converted Wetlands programs, and could potentially cross lands enrolled in the GRP. The CRP, GRP, WRP, and Prior Converted Wetlands program are voluntary programs managed by the USDA. The CRP, administered by the FSA, allows owners of agricultural land to conserve those lands through planting of native grasses, trees, and other cover, with financial assistance from the federal government (NRCS 2007b). Typically, these easements retire croplands with erodable soils or otherwise sensitive croplands from production for a period of 10 to 15 years. The WRP, which is administered by the NRCS, offers landowners the opportunity to protect, restore, and enhance wetlands located on their property (NRCS 2007c). The WRP attempts to restore wetland function and wildlife habitat, and to promote long-term conservation through technical and financial assistance. Prior Converted Wetlands are former wetlands converted for agricultural use that are targeted for voluntary restoration under direction of the NRCS and its WRP. After restoration, Prior Converted Wetlands are placed in a permanent, protective easement in exchange for compensation and cost-share assistance. The GRP has been designed to conserve grasslands, rangeland, pastureland, and shrub land from conversion to cropland and to help maintain these lands by helping to sustain ranching operations.

MEP has indicated that they are not aware of any parcels enrolled in GRP and that complete information about properties enrolled in this program would not be available until completion of easement negotiations. Further, MEP has indicated that one Prior Converted Wetland located in Madison Parish, Louisiana, would be impacted by the construction and operation of the CenterPoint Lateral. MEP indicates that 41 CRP lands (located in various Oklahoma, Texas, Louisiana, and Mississippi counties/parishes) and five WRP lands (located in Texas and Louisiana) would be crossed by the proposed Project route. The locations of these CRP and WRP lands in relation to the proposed Project

route are summarized in Tables 3.8.1-4 and 3.8.1-5, respectively. MEP indicates that the total acreage of CRP parcels encumbered by proposed construction work areas and the permanent pipeline right-of-way would not be available until completion of the easement negotiation process.

TABLE 3.8.1-4
Conservation Reserve Program Lands Crossed by the Proposed Midcontinent Express Pipeline Project

Enter Milepost	Exit Milepost	Parish/County
OK 0.2	OK 1.0	Bryan, OK
TX 13.6	TX 13.7	Lamar, TX
TX 14.0	TX 14.3	Lamar, TX
TX 17.6	TX 17.8	Lamar, TX
LA 5.5	LA 5.8	Caddo, LA
LA 23.1	LA 23.2	Bossier, LA
LA 35.0	LA 35.1	Bossier, LA
LA 42.0	LA 42.7	Webster, LA
LA 44.6	LA 45.0	Webster, LA
LA 81.1	LA 81.1	Lincoln, LA
LA 88.3	LA 88.5	Lincoln, LA
LA 100.1	LA 100.2	Union, LA
LA 132.2	LA 132.2	Morehouse, LA
LA 142.1	LA 142.2	Richland, LA
LA 142.3	LA 142.3	Richland, LA
LA 160.7	LA 161.2	Madison, LA
LA 163.0	LA 163.8	Madison, LA
LA 170.7	LA 171.9	Madison, LA
MS 8.6	MS 8.8	Warren, MS
MS 10.5[a]	MS 11.5	Warren, MS
MS 13.5[a]	MS 14.9	Hinds, MS
MS 15.7	MS 16.6	Hinds, MS
MS 17.3[a]	MS 17.9	Hinds, MS
MS 23.3	MS 23.4	Hinds, MS
MS 25.3	MS 24.5	Hinds, MS
MS 25.8	MS 26.0	Hinds, MS
MS 26.5	MS 26.9	Hinds, MS
MS 44.3[a]	MS 44.6	Hinds, MS
MS 47.6	MS 48.2	Rankin, MS
MS 102.9	MS 103.0	Jasper, MS
MS 111.1	MS 111.3	Jasper, MS
MS 112.9	MS 113.1	Jasper, MS
MS 119.8	MS 120.4	Jasper, MS
MS 120.9	MS 121.0	Jasper, MS
MS 145.2	MS 145.4	Clarke, MS
MS 148.8[a]	MS 149.2	Clarke, MS

Note:
[a] Contiguous parcels enrolled as CRP lands are represented as one enter and exit milepost segment.

TABLE 3.8.1-5
Wetland Reserve Program Lands Crossed by the Proposed Midcontinent Express Pipeline Project

Enter Milepost	Exit Milepost	Parish/ County	Crossing Length (feet)	Impact Avoidance / Minimization Measures[a]
TX 2.7	TX 3.0	Fannin County, TX	3,023.8	HDD
LA 165.2	LA 165.3	Madison Parish, LA	741.0	HDD
LA 165.3	LA 165.6	Madison Parish, LA	1,207.6	HDD
CL 1.5	CL 1.8	Madison Parish, LA	1,251.8	HDD
CL 2.7	CL 3.0	Madison Parish, LA	1,217.5	HDD
		Total	**7,441.7**	

Note:
[a] The use of HDD would eliminate surface impacts to parcel.

As a result of land use alterations and modified vegetation type or strata associated with construction and operation of the proposed Project, landowners may no longer be eligible to participate in the CRP or to receive the payments that they currently obtain from the FSA. Since lands included in the construction or permanent pipeline rights-of-way would potentially be no longer eligible for inclusion in the CRP program, affected landowners could experience an associated financial loss. As part of the right-of-way procurement process, MEP would negotiate with the affected landowners to obtain an easement agreement for the construction and permanent pipeline rights-of-way. Compensation for any losses or limitations associated with CRP lands would be addressed during those easement negotiations.

Construction of the proposed Project could temporarily disturb hydric soils and affect wetland and non-wetland vegetation within the WRP easements, and such effects would be similar to that described in Sections 3.4 and 3.5. Due to the sensitive nature of WRP lands, MEP sought to avoid crossings of these lands through reroutes of the proposed Project alignment where possible (see Section 4.0). For those crossings of WRP lands that are considered unavoidable, MEP proposes to accomplish the crossings of WRP lands via HDD; thereby, eliminating direct surface impacts to hydric soils and vegetation.

MEP would be required to obtain Warranty Easement Deed Subordination Agreements from the NRCS authorizing the crossing of any lands enrolled in the WRP, and MEP continues to consult with the NRCS regarding the proposed crossings, as well as considerations for routing, construction methods, revegetation, and other impact minimization measures. Additionally, MEP has committed to implement other special construction and operational measures within a WRP special project area located in Madison and Richland Parishes, Louisiana, where the NRCS and FWS are working to restore habitat for Louisiana black bear and create a habitat corridor through enrollment of additional lands in the WRP (see Section 3.7). However, since consultations with the NRCS are not yet complete, **we recommend that:**

- **Prior to construction on WRP lands, MEP should file with the Secretary the applicable documentation of meetings, special considerations, and agreements reached as a result of consultation with the NRCS regarding the proposed construction activities on WRP lands.**

Based on the characteristics of USDA-managed lands, MEP's proposed construction measures, additional measures to avoid and minimize impacts to WRP lands, and our above recommendations, we believe that MEP would minimize impacts to lands managed by the NRCS to the maximum extent practical.

Sixteenth Section Lands

Title for Sixteenth Section Lands is held by the State of Mississippi in trust to support public education (MSOS 2007). Sixteenth Section Lands provide income to local school districts through the use or lease of lands for silviculture, agriculture, residential, commercial, and industrial uses, and/or hunting activities.

The Mississippi Secretary of State's Office, as the designated supervisory trustee for Sixteenth Section Lands, has indicated a desire to minimize pipeline crossings of Sixteenth Section Properties to the extent practical. Impacts to these properties from pipeline crossings would result in a loss of land use flexibility, preventing certain future property uses within permanent easements. Unlike properties held by private individuals or companies, any settlement received through easement negotiations for Sixteenth Section Lands would be required to be invested in federally secured ventures; thereby potentially limiting or decreasing future revenue generation from these lands. MEP has indicated that the State of Mississippi has requested that if it were deemed that these properties could not be avoided, that crossings occur near parcel boundaries to prevent land use fragmentation.

The proposed Project would cross 11 Sixteenth Section Lands in Warren, Hinds, Rankin, Simpson, Smith, and Clarke Counties, Mississippi, permanently impacting 52.8 acres of land (Table 3.8.1-6). Approximately 73 percent of the Project length crossing Sixteenth Section Lands would be collocated with existing rights-of-way.

TABLE 3.8.1-6
Sixteenth Section Lands Crossed by the Proposed Midcontinent Express Pipeline Project

Mileposts		Acreage Impacted[a]	
Begin	**End**	**Temporary**	**Permanent**
MS 2.4	MS 3.1	7.1	6.2
MS 6.5	MS 7.6	8.4	6.6
MS 12.5	MS13.5	3.6	3.3
MS 18.4	MS 19.3	9.0	6.1
MS 24.4	MS 25.4	7.2	5.7
MS 32.8	MS 34.1	9.5	7.7
MS 47.6	MS 48.1	3.9	3.3
MS 80.1	MS 80.2	0.4	0.5
MS 85.5	MS 86.5	8.6	6.3
MS 130.1	MS 130.2	1.3	0.8
MS 135.3	MS 136.3	7.1	6.1
	Total	**66.1**	**52.8**

Note:
[a] Individual acreage impacts may not add to total acreage due to rounding.

While the Mississippi Secretary of State has supervisory authority over the management of Sixteenth Section Lands, the day-to-day management, such as overseeing leasing agreements, is left to individual school boards (MSOS 2007). MEP is currently consulting with local school boards to evaluate the proposed crossing locations and identify appropriate mitigation or avoidance measures. However, because MEP has not yet concluded these consultations, **we recommend that:**

- **MEP should consult with the Mississippi Secretary of State and associated managing local school boards regarding the proposed crossings of all Sixteenth Section Lands and file copies of any easement agreement, permits, approvals, or comments that may be obtained, including plans to address any additional mitigation measures recommended by these entities, with the Secretary prior to construction across Sixteenth Section Lands.**

3.8.1.7 Hazardous Waste Sites

MEP completed reviews of the EPA and state databases to identify any known hazardous waste sites located within 0.25 mile of the proposed Project right-of-way. Hazardous waste sites typically are associated with existing buildings and commercial industrial facilities, which the proposed Project route has largely avoided. However, 18 hazardous waste sites were identified within the 0.25-mile buffer investigated for these resources, and these sites consist of one Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site located on a parcel located adjacent to the proposed Project crossing of the Mississippi River (MP MS 0.0), one petroleum storage tank in Texas (MP TX 126.7), and 16 underground storage tanks located in Mississippi. However, none of the proposed Project construction work areas would contain a known or documented hazardous waste site.

If contaminated or hazardous soils are encountered during construction, MEP would implement procedures to identify and properly manage the contamination. In the event that contaminated media is discovered during construction of the proposed Project, MEP would stop work and proceed in accordance with applicable regulations. MEP has prepared a Plan for the Unanticipated Discovery of Contaminated Environmental Media, contained within the EMCP, identifying the procedures that would be implemented during construction to identify, test, treat, and dispose of such materials in accordance with the appropriate state and federal regulations.

Further, to minimize the impacts of inadvertent releases of fuel or equipment fluids during construction, MEP would implement its SPCC Plan to prevent and contain, if necessary, accidental spills of any material that may contaminate soils, and to ensure that inadvertent spills of fuels, lubricants, or solvents are contained and cleaned up in an appropriate manner. This SPCC Plan has been prepared by MEP in compliance with Title 40 CFR, Part 112, and describes the management of hazardous materials, such as fuels, lubricants, and coolants, that would be used during construction.

The avoidance of known hazardous waste sites combined with MEP's Implementation of its SPCC and Unanticipated Discovery of Contaminated Environmental Media plans would adequately minimize the spread of contaminated media as a result of Project construction and operation.

3.8.1.8 Transportation

Construction of the proposed Project could have two distinct effects on transportation. First, transportation could be affected if the volume of construction-related vehicles resulted in delays or other inconveniences. Second, transportation could be affected if construction resulted in road closures or lane blockages.

The proposed Project area is predominately comprised of low-density rural and suburban areas. As such, existing transportation infrastructure in the area traversed by the proposed Project route includes mostly rural roads and highways. MEP reports that the majority of construction-related traffic would occur in the early morning and late evening, outside the normal times of expected peak traffic. Further, due to the sequential nature of pipeline construction, impacts to roadways would be temporary. As such, we believe that congestion-related delays would not occur in association with construction of the proposed Project.

The proposed pipeline route would cross approximately 81 major U.S. or state and interstate highways (Table 3.8.1-7), including Interstates 30, 49, 20, 55, and 59, as well as numerous railroads and lightly traveled paved and unimproved, unpaved rural roads. As described in Section 2.3, all railroads, major highways, and interstates would be crossed using subsurface boring or directional drilling techniques to avoid road and lane closures. Most major road crossings would be bored but crossings at U.S. Hwy 82, State Hwy 137, State Hwy 577, U.S. Hwy 45, U.S. Hwy 18, and the Natchez Trace Parkway would be accomplished via HDD. Both crossing methods would avoid closure of those roadways. Pipeline crossings of the more lightly traveled paved and the unimproved, unpaved rural roads typically would be accomplished via open-cut installation, which could require temporary lane blockages and closures and implementation of detours, where feasible. In the absence of a reasonable detour, construction across the roadway would be staged to allow at least one lane of traffic to remain open except for the limited periods required for installing the pipeline. Efforts also would be made to schedule lane closures outside of peak traffic periods.

TABLE 3.8.1-7
Major Highway Road Crossings for the Proposed Midcontinent Express Pipeline Project[a]

Facility/Road Name	Parish/County	Milepost
U.S. Highway 82	Lamar, TX	TX 15.7
State Highway 19/24	Lamar, TX	TX 28.8
State Highway 37	Franklin, TX	TX 51.4
State Highway 71	Franklin, TX	TX 54.0
U.S. Highway 271	Titus, TX	TX 60.6
Interstate 30	Titus, TX	TX 75.7
U.S. Highway 259	Morris, TX	TX 81.9
State Highway 77	Morris, TX	TX 83.4
U.S. Highway 67	Morris, TX	TX 86.8
State Highway 77	Cass, TX	TX 93.6
State Highway 8	Cass, TX	TX 105.0
U.S. Highway 59	Cass, TX	TX 113.7
State Highway 43	Cass, TX	TX 116.9
State Highway 251	Cass, TX	TX 119.8
State Highway 1	Caddo, LA	LA 0.9
State Highway 168	Caddo, LA	LA 5.1
Interstate 49	Caddo, LA	LA 8.6
U.S. Highway 71	Caddo, LA	LA 9.5

TABLE 3.8.1-7 (continued)
Major Highway Road Crossings for the Proposed Midcontinent Express Pipeline Project[a]

Facility/Road Name	Parish/County	Milepost
State Highway 3	Bossier, LA	LA 20.9
State Highway 157	Bossier, LA	LA 22.3
State Highway 2	Bossier, LA	LA 30.0
U.S. Highway 371	Webster, LA	LA 37.0
State Highway 160	Webster, LA	LA 42.8
Highway 159	Webster, LA	LA 48.2
State Highway 2	Claiborne, LA	LA 53.0
State Highway 534	Claiborne, LA	LA 54.2
State Highway 540	Claiborne, LA	LA 58.7
U.S. Highway 79	Claiborne, LA	LA 59.9
State Highway 9	Claiborne, LA	LA 61.8
State Highway 2	Claiborne, LA	LA 63.6
State Highway 518	Claiborne, LA	LA 70.6
State Highway 152	Lincoln, LA	LA 79.8
Highway 167	Lincoln, LA	LA 83.7
State Highway 151	Lincoln, LA	LA 86.4
State Highway 151	Lincoln, LA	LA 87.2
State Highway 33	Union, LA	LA 95.5
State Highway 15	Union, LA	LA 99.2
State Highway 2	Union, LA	LA 109.7
State Highway 2	Union, LA	LA 112.0
State Highway 2	Union, LA	LA 117.3
State Highway 165	Ouachita, LA	LA 122.1
Highway 136	Ouachita, LA	LA 123.4
State Highway 134	Ouachita, LA	LA 125.1
Highway 139	Ouachita, LA	LA 129.8
State Highway 134	Morehouse, LA	LA 130.9
State Highway 133	Morehouse, LA	LA 139.1
State Highway 137	Richland, LA	LA 141.0
Highway 853	Richland, LA	LA 145.2
State Highway 183	Richland, LA	LA 149.0
State Highway 854	Richland, LA	LA 150.4
State Highway 17	Richland, LA	LA 158.0
State Highway 577	Madison, LA	LA 163.1

TABLE 3.8.1-7 (continued)
Major Highway Road Crossings for the Proposed Midcontinent Express Pipeline Project[a]

Facility/Road Name	Parish/County	Milepost
State Highway 80	Madison, LA	LA 164.8
Interstate 20	Madison, LA	LA 171.8
Highway 65	Madison, LA	LA 176.5
State Highway 61	Warren, MS	MS 2.1
State Highway 61	Warren, MS	MS 2.2
State Highway 27	Warren, MS	MS 9.5
State Highway 18	Hinds, MS	MS 29.6
Interstate 55	Hinds, MS	MS 42.2
State Highway 469	Rankin, MS	MS 51.6
U.S. Highway 49	Rankin, MS	MS 58.6
State Highway 13/43	Simpson, MS	MS 72.1
State Highway 541	Simpson, MS	MS 75.7
State Highway 540	Smith, MS	MS 82.0
State Highway 35	Smith, MS	MS 90.3
State Highway 37	Smith, MS	MS 91.6
State Highway 531	Jasper, MS	MS 102.3
State Highway 15	Jasper, MS	MS 104.3
State Highway 528	Jasper, MS	MS 107.0
State Highway 503	Jasper, MS	MS 121.3
Interstate 59	Jasper, MS	MS 125.9
U.S. Highway 11	Clarke, MS	MS 128.1
State Highway 18	Clarke, MS	MS 131.2
U.S. Highway 45 and 18	Clarke, MS	MS 137.8
US Highway 45	Clarke, MS	MS 140.8
State Highway 511	Clarke, MS	MS 142.8
U.S. Highway 80	Madison, LA	CL 0.4
Interstate 20	Madison, LA	CL 1.8
State Highway 17	Richland, LA	CL 4.0
State Highway 17	Richland, LA	CL 4.1

Note:
[a] All major roads would be crossed using subsurface boring or horizontal directional drilling techniques.

Construction across all roadway features would be accomplished in accordance with MEP's Plan and the requirements of all applicable crossing permits and approvals. Therefore, any effects to local transportation patterns or infrastructure would be temporary and minor. As discussed in Section 3.8.3, all scenic byways would be crossed via HDD or bore to minimize any surface impacts. As periodic maintenance and inspection activities along the proposed pipeline route would involve only infrequent light vehicle movement, no impacts to transportation would be expected during operation of the proposed Project.

3.8.1.9 Visual Resources

Visual resources refers to the composite of basic terrain, geologic features, hydrologic features, vegetative patterns, and anthropogenic features that influence the visual appeal of an area for residents or visitors. The proposed Project could alter existing visual resources in three ways: (1) construction activity and equipment may temporarily alter viewscapes; (2) construction and right-of-way maintenance would alter existing vegetation patterns; and (3) aboveground facilities would represent permanent alterations to the viewscape. The significance of these visual impacts primarily would depend on the quality of the current viewshed, the degree of alteration of that view, the number of potential viewers, and the perspective of the viewer.

3.8.1.10 Current Viewshed

Most of the proposed Project would extend through rural areas that consist of pine plantations, forested lands, pastures, and agricultural lands with scattered residences. Most areas along the route do not provide long-range unobstructed views, in part because of the topography and in part because much of the land adjacent to the proposed route is forested. However, public viewpoints are present along some of the roadways in the Project area. Further, collocation of the Project route with existing cleared rights-of-way (see Section 3.8.1.1) would limit the addition of isolated cleared right-of-way areas.

3.8.1.11 General Impacts and Mitigation

Pipeline Facilities

During construction, there would be temporary impacts to visual quality for viewers in the vicinity of the construction right-of-way due to the presence of construction equipment, work crews, and construction activities. This temporary alteration to the views likely would be perceived by some as detrimental while others may derive enjoyment from viewing construction activity. In either case, pipeline construction would represent a short-term, localized alteration to visual resources of the Project area.

After completion of construction, the temporary right-of-way would be restored to approximately preconstruction contours and would be allowed to revert to preconstruction uses and land use type. About 39.5 percent of the proposed pipeline route would traverse agricultural, pasture, and open lands. Pipeline installation in these areas would not result in a significant change to visual resources, as existing vegetative patterns would not be affected during operation of the proposed Project. However, affected forested areas outside the permanent pipeline right-of-way could take many years to recover, and forested land within the permanent right-of-way would be maintained in a condition free of woody vegetation for the life of the Project. To reduce visual impacts related to the permanent pipeline corridor, MEP's proposed route would be collocated with or parallel existing utility rights-of-way, where possible, thereby minimizing impacts to previously undisturbed vegetation. In these areas where the proposed pipeline would be collocated with existing rights-of-way, the visual impacts of the proposed Project would be minor because widening of the existing corridor would not significantly alter existing visual resources.

The long-term visual impacts resulting from views of the corridor in existing forested areas where the proposed route would not be collocated with existing rights-of-way generally would be limited to a relatively small number of individuals and/or brief observations afforded in areas where the corridor intersects roadways. As a result, we believe that the visual impact of the permanent pipeline corridor would be minor.

The proposed Project route avoids crossing state and federally managed lands to the extent possible and has also avoided most scenic vistas. However, as described in the sections above, the proposed Project route would cross six NRI-listed rivers and three Louisiana State Natural and Scenic Rivers, all of which have been noted for their visual character, as well as several state and federal scenic byways. All of the NRI-Listed waterbodies and their associated riparian areas would be crossed via HDD, thereby eliminating Project related visual impacts to these resources. Further, the proposed crossings of Bayou D'Loutre, the Big Black River, and the Strong River would be collocated with existing utility rights-of-way to further minimize visual impacts associated with the clearing of riparian vegetation.

Scenic byways would be crossed via subsurface bore or HDD. As described in Section 3.8.4, 11 of the proposed scenic byway crossings would either be collocated with existing rights-of-way or would be located in open or agricultural lands. Therefore, construction and operation of the proposed Project would not result in the creation of a new maintained, utility corridor at these crossings. In those currently forested areas where a new, cleared right-of-way would be created, the Project right-of-way would be briefly visible to passing motorists, such a minor effect would not be expected to substantially degrade the visual character of the byway. Additionally, no special state permitting requirements exist for any of the state scenic byways crossed. As requested by the NPS, the proposed crossing of the Natchez Trace Parkway would be accomplished via HDD from boundary to boundary to avoid potential visual impacts to the Parkway. Given the crossing of the Natchez Trace Parkway via HDD and the orientation of most scenic byway crossings within open/agricultural lands or adjacent to existing rights-of-way combined with the minor visual impacts anticipated to passing motorists, we believe that the proposed Project crossings of scenic byways would result in less than significant impacts.

Aboveground Facilities

The proposed Project would include the construction and operation of four new compressor stations, one booster station, 14 meter stations, 33 mainline valves, and nine pig launcher/receiver facilities. Most of the aboveground facilities would either be constructed in areas where existing viewsheds contain similar features or where views would be occluded by existing vegetation or topography. Given the limited visibility of these sites, screening provided by existing vegetation or landscaping, and frequent collocation with existing utility rights-of-way or industrial facilities, the aboveground facilities as a group would represent a minor visual alteration that would persist for the life of the Project. The potential site-specific visual impacts of each aboveground facility are described below.

Compressor Stations

The proposed compressor station sites would typically contain several buildings, including those housing compressor units and office/control/utility and storage/maintenance buildings. Aboveground features outside the buildings themselves would include gas and utility piping, filter separators, gas coolers (at some locations), pig launcher/receivers, mainline valves, and blowdown stacks. Portions of these sites may be paved, covered with gravel, or landscaped, depending on facility operations and maintenance requirements. A chain-link fence would surround the perimeter of each compressor station site.

The proposed Lamar Compressor Station would be located at MP TX 28.7 in Lamar County, Texas, on land predominantly used for agriculture. MEP would purchase approximately 39.9 acres of land in this area, but the actual footprint of the proposed compressor station would only permanently encumber approximately 15.0 acres of land. The compressor station could be visible to residences located on the west side of State Highway 19, and multiple landowners have expressed concerns about visual impacts associated with the proposed compressor station. In response to public concerns regarding the visual impacts of the Lamar Compressor Station, MEP has developed draft site-specific screening and light shielding plans that would include landscaping to screen the facility and glare shields to minimize light intrusion. MEP has consulted with and satisfied two adjacent landowners in the development of the draft plans. Further, MEP has committed to consult with other interested adjacent residences that are within sight of the proposed facilities before finalizing the plans. MEP proposes to meet with other adjacent landowners in May of 2008 to finalize the screening and lighting plans.

The proposed Atlanta Compressor Station site (MP TX 117.4) consists of approximately 30 acres of forested land in Cass County, Texas. However, operation of the proposed station would only encumber approximately 11.7 acres of land, and the balance of that area would remain forested, which would largely screen the compressor station from any nearby residences.

Similarly, the proposed Perryville Compressor Station site (MP LA 109.6) in Union Parish, Louisiana, is also currently occupied by pine forest. MEP would purchase approximately 39.9 acres of land in this area, but the actual footprint of the proposed compressor station would only encumber approximately 13.7 acres of land. Areas unaffected by construction and operation of the station would remain forested to screen the compressor station, and the Perryville Compressor Station would not be within view of any existing residences or businesses.

The site of the proposed Delhi Booster Station (MP CL 3.6) in Madison Parish, Louisiana, is comprised almost entirely of open, agricultural land. Though the construction and operational footprint of the proposed facility would only occupy approximately 15.9 acres of a larger 28.9-acre parcel purchased by MEP, a review of aerial alignment sheets indicates that multiple residences would be in located in close proximity to the proposed facility. Though the quality of the existing viewshed is already compromised by nearby natural gas compression and metering facilities, MEP has produced a lighting plan for the facility that specifies the location, size, and orientation of lighting fixtures to minimize off-site light intrusion. Further, a draft visual screening plan has been developed for the proposed Delhi Booster Station that would entail the placement of local plant species around the facility perimeter.

Similar to the Lamar and Delhi facilities, the proposed Vicksburg Compressor Station site (MP MS 11.8) in Warren County, Mississippi, consists of open, agricultural land, and construction and operation of that facility would encumber approximately 11.2 acres of land. The undisturbed acreage surrounding the facility would remain in agricultural production, potentially making the compressor station visible to nearby residences. Review of aerial photography and topographic maps indicate that no structures are within approximately 0.25 mile of the proposed site, and it is unlikely that any residents would have a direct view of this facility.

Because the screening and lighting plans for the Lamar Compressor Station and Delhi Booster Station have not been finalized and all community stakeholder consultations have not occurred, we have recommended below that MEP file final site screening and lighting plans for both compressor station sites and any associated agreements and/or correspondence documenting full community involvement and input for the Lamar Compressor Station plans.

Meter Stations

Meter stations would be constructed adjacent to the cleared pipeline right-of-way at each of the proposed Project receipt and interconnect points to meter the flow and adjust the pressure of natural gas received from or delivered to those systems. Each meter station would include meter and regulator equipment, flow pressure control equipment, and associated instrumentation and controls, all housed within a fenced and gated perimeter. The meter station facilities proposed by MEP would affect a total of approximately 17.7 acres and 3.6 acres for construction and operation, respectively.

Review of aerial alignment sheets and topographic maps indicate that the ANR (MP LA 152.3) and Transco Interconnects (MP AL 5.5) would potentially be visible to nearby residences located approximately 1,500 and 250 feet, respectively, from the proposed aboveground facility locations. As described in Section 2.0, the location of the CEGT Interconnect has changed to MP CL 4.1 and would be located near an existing compressor station facility. Our review of aerial photography indicates that the CEGT Interconnect would be located within an open field approximately 200 feet from an existing residence. All other Project meter stations would either be installed adjacent to other aboveground facilities, largely screened by surrounding forested vegetation, or located more than 0.25 mile from the nearest residence or business. In addition, the viewsheds of most of these facilities already include existing, maintained utility rights-of-way. For these reasons, the visual impacts associated with construction and operation of those facilities would be minor.

To mitigate any visual impacts that could result from construction and operation of the ANR Interconnect, MEP has developed a draft visual screening plan that includes the use of local plant species placed around the perimeter of the facility. At the proposed Transco Interconnect, MEP proposes to retain existing vegetation to visually buffer the facility from nearby residences. MEP has not provided any screening plans to mitigate visual impacts to residences in proximity to the CEGT Interconnect. We recommend below that MEP finalize the draft visual screening plan for the ANR Interconnect and develop a screening plan for the CEGT Interconnect.

Pig Launcher/Receiver Facilities

A pig launcher and receiver would be located at the origin and terminus, respectively, of the Project mainline and the CenterPoint Lateral, which would be occupied by the proposed Enogex, Transco, CEGT, and CGT Interconnects. Similarly, a pig launcher/receiver facility would also be located at the transition point from 30- to 42-inch-diameter pipeline, which would occur within the confines of the proposed NGPL No. 1, Transco, and ETC Interconnects. Thus, any visual impacts associated with those pig launcher/receiver facilities are accounted for in the analysis of those meter station facilities. The remaining pig launcher/receiver facilities would consist of aboveground flanged piping designed to accommodate mobile smart pig pipeline inspection equipment housed within a fenced area that would partially overlap the permanent pipeline right-of-way. These fenced areas would measure either 100-feet by 200-feet or 100-feet by 350-feet, depending on whether a pig launcher, a pig receiver, or both would be installed at the location. Review of aerial alignment sheets and topographic maps indicate that one pig launcher/receiver facility (MP TX 123.4) would be located in close proximity to and potentially visible from nearby residences and business. MEP has not provided a draft visual screening plan for this facility. As shown in Table 2.1-2 and Appendix B, this facility would not be collocated with other Project aboveground facilities and would be visible to nearby landowners; therefore, we recommend below that MEP develop a site screening plan for the pig launcher/receiver facility located at MP TX 123.4.

In order to minimize visual impacts from aboveground facilities to adjacent residences, **we recommend that:**

- **Prior to construction, MEP should file with the Secretary final site screening plans for the Lamar and Delhi Booster Compressor Stations and include copies of any screening plan agreements and correspondence with community groups. MEP should also file final site screening plans for the CEGT and ANR meter stations/interconnect facilities and the pig launcher/receiver facility located at MP TX 123.4.**

Mainline Valves

Four of the mainline valves, MLV Nos. 30-01, 30-04, 42-01, and 36-12 would be located within the confines of the proposed Enogex, NGPL No. 1, ETC, and Transco Interconnect facilities. Similarly, MLV Nos. 42-02 and 42-14 would be installed within the perimeter of the Lamar and Perryville Compressor Stations, and MLV Nos. 42-07, 42-12, 42-17, 36-01, and 36-06 would be located within the confines of proposed pig launcher/receiver facilities. Thus, construction and operation of these mainline valves would not result in additional visual impacts beyond that noted for those aboveground facilities. The remaining mainline valve sites would typically consist of a 50-foot by 50-foot fenced area installed within the limits of the permanent pipeline right-of-way, and the aboveground components at each site would consist of valve operators and by-pass systems that would be contained within a fenced perimeter.

Based on review of aerial alignment sheets and information provided by MEP, it is likely that four mainline valves (MLV Nos. 30-02, 42-05, 42-08, and 36-02) would be visible from nearby residences. The other mainline valves would either be installed adjacent to other aboveground facilities or would not generally be visible to nearby residents or the public due to existing vegetation or other visual screens. Each of the potentially visible mainline valves would appear as a small fenced area within a cleared utility right-of-way unless the valve is located in an open field. This could result in a long-term effect on visual quality, though the significance of the impact would vary with the viewer. Although visible to nearby residents, due to the small size of the MLV facilities, we do not believe that the visual impact would be significant at these locations.

3.9 SOCIOECONOMICS

3.9.1 Region of Influence

The proposed Midcontinent Express Pipeline Project would consist of approximately 510.3 miles of multi-diameter, interstate natural gas pipeline, one booster and four new mainline compressor stations, and associated ancillary facilities, as described in Section 2.1. As proposed, the Project route would traverse one county in Oklahoma (Bryan), seven counties in Texas (Fannin, Lamar, Red River, Franklin, Titus, Morris, and Cass), ten parishes in Louisiana (Caddo, Bossier, Webster, Claiborne, Lincoln, Union, Ouachita, Richland, Morehouse, and Madison), seven counties in Mississippi (Warren, Hinds, Rankin, Simpson, Smith, Jasper, and Clarke), and a single county in Alabama (Choctaw). For the purposes of our socioeconomic analysis, we define these counties and parishes as the region of influence for the proposed Project.

Several potential socioeconomic effects would manifest themselves within the region of influence. Temporary effects during construction of the proposed Project would include alteration of population levels or local demographics, increased demand for housing and or public services, and increased employment opportunities. In addition construction would result in increased government revenue associated with sales and payroll taxes. Potential socioeconomic impacts associated with long-term operation of the proposed Project would include employment opportunities, ongoing local expenditures by the operating company, an increased tax base, and an increase in the demand for provision of public services.

Consistent with EPA's scoping comments on the Project and the CEQ request that federal agencies actively scrutinize several parameters associated with environmental justice (CEQ 1997), this section of the EIS also contains an analysis of environmental justice.

3.9.2 Population

Table 3.9.2-1 reports population and selected demographics in the states, counties, and parishes that would be traversed by the proposed Project. Based on census data from the year 2000 (U.S. Census Bureau 2007a), the total population in the region of influence was estimated to be 1,441,863. With the exception of Rankin County, Mississippi, populations in the area were relatively stable between 2000 and 2006, with no county or parish having more than about a 10-percent change in population over the six-year period. A 17.8-percent growth rate was reported for Rankin County during this period, which seems attributable to the county's national ranking as one of the top ten best rural places to live, its location in proximity to Jackson, Mississippi's capital city, as well as high ranking school districts and hospitals (Rankin County Chamber of Commerce 2007).

Population densities in the region range from a low of 13.6 persons per square mile in Red River County to a high of 288.6 persons per square mile in Hinds County. These densities are typical and consistent with average rural populations, though somewhat low compared to average urban populations, which typically range from 3,000 to 6,000 persons per square mile (FERC 2003).

The proportion of residents that belong to most minority groups within the region of influence is generally similar to or lower than the proportions reported for the respective states as a whole, while the proportion of white or non-Hispanic groups is generally similar to or higher than statewide statistics in most counties and parishes. However, 16 of the counties and parishes traversed contain a greater percentage of persons describing themselves as black or African-American, relative to the state-level statistics, and five counties contain a slightly greater percentage of Native Americans (see Table 3.9.2-1).

The number of residents within the region of influence would increase temporarily during construction, which would occur between August 2009 and February 2009, as proposed. MEP estimates that the peak construction workforce would be 5,400 workers, of which about 3,330 workers would be non-local. Assuming 0.8 family members (FERC 2003) would accompany each non-local worker, total construction-related immigration to the region of influence would be approximately 5,994 persons. MEP indicates that construction of the pipeline would entail the simultaneous activity of seven individual construction spreads over the proposed Project route. Additional work crews would also be employed at each of the proposed aboveground facilities. As such, these workers would be distributed along the length of proposed Project route and throughout the region of influence, thereby minimizing the potential population level and demographic effects to any individual county or parish.

As depicted in Table 3.9.2-2, population change in the counties and parishes within the region of influence induced by construction-related immigration would range from less than 0.1 percent to 3.6 percent. This would represent only a minor, temporary population increase and would be confined to the period of Project construction. The FERC does not believe that the work force would have a significantly different demographic profile than that observed within the region of influence. As such, changes to local demographics are not anticipated to result from construction of the proposed Project.

During operation, MEP estimates that the proposed Project would employ approximately 13 full-time workers, including three workers at the Lamar Compressor Station; eight workers at the Perryville Compressor Station; and two workers at a Jackson, Mississippi, area field office. This would represent only a negligible, long-term population and demographic alteration within these areas.

TABLE 3.9.2-1
Existing Population and Demographics Conditions in the Region of Influence for the Proposed Midcontinent Express Pipeline Project[a]

County / Parish	2006 Population	Population Change since 2000 (%)	Population Density	White, Non Hispanic (%)	Black or African American (%)	Hispanic (%)	Asian (%)	Native American (%)
Oklahoma	**3,579,212**	**3.7**	**50.3**	**72.5**	**7.7**	**6.6**	**1.5**	**8.1**
Bryan	38,395	5.1	40.2	78.0	1.6	3.7	0.6	12.3
Texas	**23,507,783**	**12.7**	**79.6**	**49.2**	**11.7**	**35.1**	**3.3**	**0.7**
Fannin	33,337	6.7	35.1	83.1	7.7	7.2	0.4	0.9
Lamar	49,863	2.8	52.9	79.6	13.3	4.4	0.6	1.1
Red River	13,440	-6.1	13.6	77.3	17.0	4.5	0.2	0.5
Franklin	10,367	9.6	33.1	83.6	5.0	10.2	0.5	0.8
Titus	30,306	7.8	68.4	54.5	9.9	34.7	0.7	0.8
Morris	13,002	-0.4	51.2	70.7	23.6	4.3	0.3	0.5
Cass	29,955	-1.6	32.5	77.3	18.8	2.5	0.2	0.5
Louisiana	**4,287,768**	**-4.1**	**103.0**	**61.6**	**33.1**	**2.8**	**1.4**	**0.6**
Caddo	253,118	0.4	286.0	49.7	46.5	1.9	0.9	0.4
Bossier	107,270	9.1	117.0	71.7	21.3	3.9	1.4	0.6
Webster	41,301	-1.3	70.3	64.8	33.2	1.0	0.3	0.3
Claiborne	16,210	-3.8	22.3	51.0	48.1	1.0	0.0	0.1
Lincoln	41,857	-1.5	90.3	56.6	39.9	1.7	1.4	0.3
Union	22,964	0.7	26.0	69.7	27.0	2.8	0.3	0.2
Ouachita	149,259	1.4	241.0	62.3	34.8	1.4	0.8	0.3
Morehouse	29,761	-4.1	39.1	54.3	44.6	0.9	0.3	0.1
Richland	20,554	-2.0	37.6	61.0	37.5	1.4	0.2	0.1
Madison	12,328	-10.2	22.0	36.0	61.5	2.5	0.3	0.2
Mississippi	**2,910,540**	**2.3**	**60.6**	**59.7**	**36.9**	**1.7**	**0.7**	**0.4**
Warren	49,308	-0.7	84.6	51.5	46.0	1.2	0.7	0.2
Hinds	249,012	-0.7	289.0	32.7	65.2	0.9	0.5	0.1
Rankin	135,830	17.8	149.0	78.2	18.6	1.7	0.8	0.2
Simpson	27,972	1.2	46.9	63.4	34.7	1.5	0.1	0.1
Smith	15,970	-1.3	25.4	75.9	23.2	0.8	0.1	0.1
Jasper	18,197	0.3	26.8	46.7	52.5	0.8	0.1	0.0
Clarke	17,631	-1.8	26.0	65.4	33.7	0.7	0.1	0.1
Alabama	**4,599,030**	**3.4**	**87.6**	**69.3**	**26.4**	**2.3**	**0.8**	**0.5**
Choctaw	14,656	-8.0	17.4	55.3	43.9	0.8	0.1	0.1

Note:
[a] Source: 2000 Census: State & County QuickFacts (U.S. Census Bureau 2007a); website accessed 7/2/2007.

TABLE 3.9.2-2
Estimated Population Change in the Region of Influence for the Proposed Midcontinent Express Pipeline Project

	Pipeline/ Workforce Spread[a]	Compressor Stations Workforce	Interconnect Workforce	Total Workforce	Non-Local Workforce	Family Members	Population Change (Number)	Population Change (%)
Oklahoma								
Bryan	58	0	50	108	65	52	116	0.3
Texas								
Fannin	56	0	0	56	34	27	61	0.2
Lamar	319	250	100	669	401	321	723	1.4
Red River	29	0	0	29	17	14	31	0.2
Franklin	58	0	0	58	35	28	62	0.6
Titus	141	0	0	141	84	68	152	0.5
Morris	71	0	0	71	42	34	76	0.6
Cass	283	200	50	533	360	288	647	2.2
Louisiana								
Caddo	96	0	0	96	58	46	104	<0.1
Bossier	162	0	0	162	97	78	175	0.2
Webster	98	0	0	98	59	47	106	0.3
Claiborne	201	0	0	201	121	97	217	1.3
Lincoln	108	0	0	108	65	52	116	0.3
Union	202	250	0	452	271	217	489	2.1
Ouachita	79	0	50	129	78	62	140	0.1
Morehouse	76	0	0	76	46	37	82	0.3
Richland	142	200	50	392	237	190	427	2.1
Madison	301	0	100	401	249	199	447	3.6
Mississippi								
Warren	98	200	0	298	219	175	394	0.8
Hinds	235	0	50	285	171	137	308	0.1
Rankin	188	0	0	188	113	90	204	0.1
Simpson	84	0	0	84	51	40	91	0.3
Smith	149	0	50	199	120	96	215	1.3
Jasper	180	0	50	230	138	110	248	1.4
Clarke	197	0	50	247	148	119	267	1.5
Alabama								
Choctaw	39	0	50	89	54	43	96	0.7
Total	**3,650**	**1,100**	**650**	**5,400**	**3,330**	**2,664**	**5,994**	**0.4**

Note:
[a] These numbers include the expected workforce for the Project mainline and the CenterPoint Lateral.

3.9.3 Economy and Employment

The civilian labor force in the region of influence includes approximately 643,017 people (Table 3.9.3-1). The main employment sectors in the affected counties and parishes are education, health, social services, and manufacturing. In general, the counties and parishes within the region of influence report that unemployment rates are similar to and per capita income is lower than the state-level values. Of a total of 26 counties and parishes in the region of influence, 20 show per capita income below their respective state average values. Unemployment rates are lower and per capita income is higher than state averages in the counties and parishes near the metropolitan areas of Shreveport, Louisiana (Caddo and Bossier); Monroe, Louisiana (Ouachita); Vicksburg, Mississippi (Warren); and Jackson, Mississippi (Hinds and Rankin).

TABLE 3.9.3-1
Existing Income and Employment Conditions within the Region of Influence for the Proposed Midcontinent Express Pipeline Project [a]

County / Parish	Per Capita Income ($)	2004 Population Below Poverty Level (%)	Civilian Labor Force	Unemployment Rate (%)[b]	Major Industry
Oklahoma	**$17,646**	**14.0**	**1,632,128**	**4.0**	**Education, health and social services**
Bryan	$14,217	16.6	16,722	3.6	Education, health and social services
Texas	**$19,617**	**16.2**	**9,830,559**	**4.9**	**Education, health and social services**
Fannin	$16,066	15.4	13,010	6.1	Education, health and social services
Lamar	$17,000	17.7	21,634	5.5	Education, health and social services
Red River	$15,058	18.4	6,314	5.6	Manufacturing
Franklin	$17,563	13.6	4,056	4.3	Education, health and social services
Titus	$15,501	16.0	11,965	4.3	Manufacturing
Morris	$15,612	16.4	5,475	5.5	Manufacturing
Cass	$15,777	17.3	12,596	6.0	Education, health and social services
Louisiana	**$16,912**	**19.2**	**1,997,995**	**4.0**	**Education, health and social services**
Caddo	$17,839	20.5	115,370	4.0	Education, health and social services
Bossier	$18,119	14.4	45,405	3.3	Education, health and social services
Webster	$15,203	19.0	18,106	3.9	Education, health and social services
Claiborne	$13,825	23.9	6,297	4.2	Education, health and social services
Lincoln	$14,313	22.6	20,244	4.2	Education, health and social services
Union	$14,819	18.7	9,962	3.9	Education, health and social services
Ouachita	$17,084	21.2	69,818	3.7	Education, health and social services
Morehouse	$13,197	25.0	12,390	6.0	Education, health and social services
Richland	$12,479	24.7	8,249	4.7	Education, health and social services
Madison	$10,114	30.6	4,883	5.5	Education, health and social services

TABLE 3.9.3-1 (continued)
Existing Income and Employment Conditions within the Region of Influence for the Proposed Midcontinent Express Pipeline Project [a]

County / Parish	Per Capita Income ($)	2004 Population Below Poverty Level (%)	Civilian Labor Force	Unemployment Rate (%)[b]	Major Industry
Mississippi	**$15,853**	**19.3**	**1,267,092**	**6.8**	**Education, health and social services**
Warren	$17,527	18.3	23,461	5.9	Education, health and social services
Hinds	$17,785	22.4	118,908	5.8	Education, health and social services
Rankin	$20,412	10.6	59,359	4.1	Education, health and social services
Simpson	$13,344	20.6	11,324	5.6	Education, health and social services
Smith	$14,752	17.3	6,966	5.6	Manufacturing
Jasper	$12,889	21.3	7,218	6.0	Manufacturing
Clarke	$14,288	19.7	7,290	6.3	Manufacturing
Alabama	**$18,189**	**16.1**	**2,047,100**	**3.6**	**Education, health and social services**
Choctaw	$14,635	20.2	5,995	5.1	Manufacturing

Notes:
[a] Source, unless otherwise noted is 2000 Census: State & County QuickFacts (U.S. Census Bureau 2007a); website accessed 7/2/2007
[b] Bureau of Labor Statistics 2006 Annual Average by County; website accessed 7/2/2007

Construction of the proposed Project would result in the hiring of approximately 2,070 local workers within the region of influence. Additional jobs would also be created as a result of secondary activity associated with construction of the proposed Project, as purchases made by non-local workers on food, clothing, lodging, gasoline, and entertainment would have a temporary, stimulatory effect on the local economy. These jobs would represent a temporary, moderate increase in employment opportunities within the region of influence. During operation, the proposed Project would create 13 full-time positions. This would represent a negligible but long-term increase in the number of employment opportunities within the region of influence. During the Draft EIS comment period, we received comments from the Paris, Texas Economic Development Corporation, Bossier Parish, Louisiana Tax Assessor, Louisiana Economic Development Department, Louisiana Department of Natural Resources, a Louisiana State Senator, and the Hinds County, Mississippi Economic Development District in favor of the proposed Project due to economic considerations.

3.9.4 Housing

Table 3.9.4-1 reports selected housing statistics for the region of influence. Within this region, there are approximately 18,900 rental units, as well as about 9,575 additional units used for seasonal, recreational, or occasional use. Approximately 16,000 hotel or motel rooms supplement this potential housing stock.

TABLE 3.9.4-1
Temporary Housing Units Available within the Region of Influence for the Proposed Midcontinent Express Pipeline Project [a]

County/Parish	Number of Rental Units	Rental Vacancy Rate (%)	Units for Seasonal, Recreational, or Occasional Use	Number of Hotel/Motel Rooms	Total Units
Oklahoma	**50,165**	**10.6**	**32,293**	**N/A**	**82,458**
Bryan	475	9.7	660	124 [b]	1,259
Texas	**249,240**	**8.5**	**173,149**	**N/A**	**422,389**
Fannin	363	11.5	385	53 [c, b]	801
Lamar	651	9.4	238	323 [c, b]	1,212
Red River	145	9.0	280	70 [d]	495
Franklin	118	13.0	864	43 [c, b]	1,025
Titus	320	10.8	120	354 [c, b]	794
Morris	162	12.3	118	21 [d]	301
Cass	290	10.0	289	244 [d]	823
Louisiana	**54,185**	**9.3**	**39,578**	**N/A**	**93,763**
Caddo	4,327	10.9	741	2,686 [e]	7,754
Bossier	1,374	10.9	450	2,046 [e]	3,870
Webster	433	9.3	458	308 [e]	1,199
Claiborne	171	10.1	597	61 [e]	829
Lincoln	891	12.7	156	520 [e]	1,567
Union	139	7.7	882	50 [d]	1,071
Ouachita	1,969	9.0	395	928 [c, b]	3,292
Morehouse	295	8.3	253	40 [c, b]	588
Richland	159	7.1	246	85 [c, b]	490
Madison	104	5.8	167	34 [c, b]	305
Mississippi	**29,486**	**9.2**	**21,845**	**N/A**	**51,331**
Warren	822	12.1	199	1,537 [f]	2,558
Hinds	4,154	11.2	421	4,944 [f]	9,519
Rankin	1,060	9.9	393	1,261 [f]	2,714
Simpson	161	7.8	202	110 [c, b, f]	473
Smith	68	7.9	165	0	233
Jasper	61	6.4	213	24 [d]	298
Clarke	94	7.9	159	25 [f]	278

TABLE 3.9.4-1 (continued)
Temporary Housing Units Available within the Region of Influence for the Proposed Midcontinent Express Project [a]

County/Parish	Number of Rental Units	Rental Vacancy Rate (%)	Units for Seasonal, Recreational, or Occasional Use	Number of Hotel/Motel Rooms	Total Units
Alabama	**64,091**	**11.8**	**47,205**	**N/A**	**111,296**
Choctaw	95	9.8	525	105 [d]	725
Total	**18,901**		**9,576**	**15,996**	**44,473**

Notes:
[a] Source, unless otherwise noted, is Census 2000: American FactFinder (U.S. Census Bureau 2007b); website accessed 7/3/2007.
[b] ePodunk online at http://www.epodunk.com/counties; accessed 7/3/2007.
[c] AAA Tourbook.
[d] Google Business Locator www.google.com/maps; accessed 7/3/2007.
[f] Mississippi Development Authority official website at http://www.visitmississippi.org/; accessed 7/3/2007
[e] The Coordinating and Development Corporation: Accessed online at http://www.cdconline.org/; accessed 7/3/2007.

At its peak, construction of the proposed Project would require about 3,330 non-local workers, as described in Section 3.9.2. If each worker required his or her own housing unit, the non-local work force would occupy only about 7.5 percent of the temporary housing units within the region of influence. Thus, the temporary housing available within the region of influence would be capable of meeting the temporary and moderate increased demand for housing resulting from construction of the proposed Project. Housing demand for the 13 permanent positions generated by operation of the proposed Project would represent a permanent but negligible increase in housing demand.

3.9.5 Property Values

During the scoping and Draft EIS comment periods for the proposed Project, we received several comments regarding the proposed Project's impact on property values and related economic considerations. These concerns generally centered on three topics: devaluation of property if encumbered by a pipeline easement; the responsible party for property taxes within pipeline easement; and economic effects resulting from lost timber production values. In addition, the FERC sometimes encounters questions related to the potential for pipeline projects to adversely affect landowner insurance premiums.

The impact that a natural gas project may have on the value of any land parcel depends on many factors. These include the size of the parcel, the parcel's current value and land use, and the value of other nearby properties. However, subjective valuation is generally not considered in appraisals. This is not to say that the proposed Project would not affect resale values. Potential purchasers may make a decision based on intended future use and, if the presence of the proposed Project would make the use infeasible, it is possible that the potential purchaser may not acquire the parcel. However, each potential purchaser has differing criteria and means.

Landowners are responsible for all property taxes levied against parcels of land, and this responsibility would be independent of the existence of any Project-related pipeline easement. However, if a landowner thought that the proposed Project, should it be constructed, would reduce the value of their

property, he or she could appeal the assessment and subsequent property taxation to the local property taxation agency. If the parcel of land was re-appraised, the landowner would then be responsible for property taxes based upon an appraisal that directly incorporated the easement.

As described in Section 3.8, construction and operation of the proposed Project would result in a permanent conversion of some lands currently used for commercial forestry operations to a maintained utility right-of-way. Timber production would be precluded within the permanent pipeline right-of-way, and affected landowners would therefore suffer a loss of economic returns that might otherwise be achieved. As part of the right-of-way procurement process, MEP would negotiate with the affected landowners to obtain an easement agreement that eliminates timber production within the permanent pipeline right-of-way. Compensation for any losses or limitations on future timber production values would be addressed during those easement negotiations.

Regarding the potential for insurance premium adjustments associated with pipeline proximity, insurance advisors consulted on other natural gas projects reviewed by the FERC have indicated that LNG terminals and associated pipeline infrastructure do not have an impact on homeowner insurance rates (FERC 2004). As such, the FERC believes that homeowners' insurance rates are unlikely to change as a result of construction and operation of the proposed Project facilities.

3.9.6 Government Revenue

A portion of the estimated $250 million total construction payroll would be spent locally for the purchase of housing, food, gasoline, and entertainment during construction. The exact amount would be dependent upon the proportion of the workforce that was local, the behavior of individual workers, and the duration of their stay. In addition, MEP has indicated that it is likely that some portion of the construction materials and supplies, estimated at $30 million total, would be purchased locally. The majority of these construction-related expenditures would be subject to state sales tax, including Alabama and Louisiana's rate of 4 percent, Oklahoma's rate of 4.5 percent, Texas' rate of 6.25 percent, and Mississippi's rate of 7 percent. This increase in sales tax would represent a minor, short-term increase in each state's sales tax revenues.

Table 3.9.6-1 reports MEP's estimate of the annual property taxes that would be payable to each county and parish traversed by the proposed Project. On average, operations-related taxes would represent about 2 percent of each county or parish's total revenues. Thus, operation of the proposed Project would provide a permanent, but minor increase in government revenues.

TABLE 3.9.6-1
County Revenue and Estimated Annual Taxes for the Proposed Midcontinent Express Pipeline Project

County / Parish	Total Revenue[a]	Estimated Annual Taxes	Change (%)
Oklahoma			
Bryan	$51,041,000	$254,000	0.5
Texas			
Fannin	$46,364,000	$119,000	0.3
Lamar	$91,460,000	$1,937,000	2.1
Red River	$36,485,000	$98,000	0.3
Franklin	$23,565,000	$165,000	0.7
Titus	$120,351,000	$445,000	0.4
Morris	$25,043,000	$211,000	0.8
Cass	$81,303,000	$943,000	1.2
Louisiana			
Caddo	$603,142,000	$1,149,000	0.2
Bossier	$240,908,000	$1,253,000	0.5
Webster	$76,982,000	$482,000	0.6
Claiborne	$39,726,000	$947,000	2.4
Lincoln	$73,936,000	$674,000	0.9
Union	$30,700,000	$1,501,000	4.9
Ouachita	$296,142,000	$515,000	0.2
Morehouse	$71,029,000	$398,000	0.6
Richland	$55,064,000	$877,000	1.6
Madison	$21,135,000	$2,169,000	10.3
Mississippi			
Warren	$108,653,000	$769,000	0.7
Hinds	$553,902,000	$2,775,000	0.5
Rankin	$178,513,000	$1,739,000	1.0
Simpson	$39,764,000	$694,000	1.7
Smith	$20,916,000	$1,668,000	8.0
Jasper	$29,780,000	$1,818,000	6.1
Clarke	$29,747,000	$1,676,000	5.6
Alabama			
Choctaw	$26,182,000	$75,000	0.3
Total	**$2,971,833,000**	$25,351,000	
Average			**2.0**

Notes:
[a] Source: U.S. Bureau of the Census 2007c; accessed 7/5/2007.

3.9.7 Public Services

Table 3.9.7-1 summarizes the number of full-time equivalent educational, medical, police, and fire protection employees in the counties and parishes traversed by the proposed Project. These employees serve a population of about 1.4 million (Table 3.9.2-1).

TABLE 3.9.7-1
Existing Educational, Medical, Police, and Fire Full-time Equivalents within the Region of Influence for the Proposed Midcontinent Express Pipeline Project[a]

County/ Parish	Education	Health and Hospitals	Police Protection	Fire Protection	Total Health, Fire, and Police
Oklahoma	**114,930**	**20,216**	**10,631**	**4,151**	**34,998**
Bryan	1,067	23	64	29	116
Texas	**737,052**	**111,624**	**60,565**	**21,395**	**193,584**
Fannin	909	4	54	12	70
Lamar	1,699	11	94	2	107
Red River	484	0	47	6	53
Franklin	212	0	21	0	21
Titus	1,258	639	72	21	732
Morris	437	0	24	0	24
Cass	1,098	287	89	15	391
Louisiana	**137,745**	**41,620**	**16,055**	**4,637**	**62,312**
Caddo	7,095	137	985	598	1,720
Bossier	2,744	11	329	207	547
Webster	975	0	71	13	84
Claiborne	414	349	24	0	373
Lincoln	937	3	98	48	149
Union	596	41	48	1	90
Ouachita	3,813	316	458	369	1,143
Morehouse	817	366	131	46	543
Richland	506	358	61	3	422
Madison	382	0	12	0	12
Mississippi	**95,277**	**32,720**	**8,770**	**3,450**	**44,940**
Warren	1,219	33	172	116	321
Hinds	7,871	16	906	506	1,428
Rankin	2,208	4	275	145	424
Simpson	527	146	63	0	209
Smith	392	0	33	2	35
Jasper	492	177	21	0	198
Clarke	477	0	31	2	33
Alabama	**133,367**	**45,158**	**13,054**	**5,098**	**63,310**
Choctaw	411	0	15	0	15
Total	**39,040**	**2,921**	**4,198**	**2,141**	**9,260**

Note:
[a] Source: U.S. Bureau of the Census Online 2007c; accessed 7/6/2007.

Demand for medical, police, and fire protection services would temporarily increase during construction of the proposed Project. MEP has consulted with the counties and parishes in the region of

influence and believes that sufficient public services exist to meet Project-related needs. Further, MEP would work with local law enforcement and emergency response agencies to coordinate effective emergency response for the proposed Project during construction and operation (see Section 3.12.1).

We note that construction of the proposed Project would occur during the school year, and a significant influx of students would place considerable strain on the region's approximately 39,000 education workers. However, due to the nature of the proposed construction and its relatively short duration (approximately 8 months), non-local workers are not expected to be accompanied by substantive numbers of children. Thus, any impact on the education sector would be minor and temporary.

During operation of the proposed Project, workers filling the 13 full-time positions and their associated family members would represent a minor, permanent increase in the demand for the provision of public services. However, this increased demand would be offset by the Project-related increase in government revenues associated with operation (see Section 3.9.6).

3.9.8 Impacts on Specific Economic Sectors

Below, we consider the potential for the proposed Project to result in significant effects to the agriculture and forestry economic sectors. These sectors are defined to include activities related to harvesting crops, production of timber, pasturing of livestock, and production of dairy. This analysis focuses on the effects of potential land use changes (i.e., the incorporation of agricultural lands into the construction of permanent rights-of-way) on regional economic sectors. Additional discussion of the potential for Project-related effects to agricultural and commercial forestry lands (pine plantations) that would be traversed by the proposed pipeline route is provided in Sections 3.2 and 3.8.

As described in Section 3.8, construction and operation of the proposed Project would permanently affect approximately 526.2 acres of agricultural land and 299.7 acres of lands currently utilized for commercial forestry practices (i.e., pine plantation), as these areas would be located within the permanent pipeline right-of-way or aboveground facilities. As discussed throughout this EIS, agricultural operations within the vast majority of permanent pipeline right-of-way would not be precluded during operations. As affected agricultural lands would largely return to their preconstruction condition and use, no significant effect to that economic sector would be anticipated in association with construction and operation of the proposed Project. Commercial forestry practices would be permanently precluded within the permanent pipeline right-of-way. However, given the magnitude of the land potentially affected relative to the total amount of land dedicated to sector production, no quantifiable impacts to the forestry economic sector would be expected.

3.9.9 Environmental Justice

Executive Order 12898 on Environmental Justice recognizes the importance of using the NEPA process to identify and address, as appropriate, any disproportionately high and adverse health or environmental effects of its programs, policies, or activities on minority populations and low-income groups. The provisions of Executive Order 12898 apply equally to Native American programs. Consistent with Executive Order 12898, the CEQ called upon federal agencies to actively scrutinize the following issues with respect to environmental justice (CEQ 1997):

- the racial and economic composition of affected communities;
- health-related issues that may amplify project effects on minority or low-income individuals; and

- public participation strategies, including community or tribal participation in the process.

The EPA provides guidance on determining whether there is a minority or low income community to be addressed in a NEPA analysis. Minority population issues must be addressed when they comprise over 50 percent of an affected area or when the minority population percentage of the affected area is substantially greater than the minority percentage in the larger area of the general population. Low income populations are those that fall within the annual statistical poverty thresholds from the U.S. Department of Commerce, Bureau of the Census Population Reports, Series P-60 on Income and Poverty.

3.9.9.1 Potential for Disproportionate and Adverse Impacts

Minority populations comprise less than 50 percent of the population in 22 of the 26 counties and parishes traversed by the proposed Project, and minorities do not comprise more than 50 percent of the population in the region of influence as a whole. However, minorities do comprise greater than 50 percent of the population in four of the counties or parishes within the region of influence (Table 3.9.2-1). Caddo and Madison Parishes, Louisiana, have minority populations that comprise approximately 50.3 and 64 percent, respectively, of the total parish populations. Similarly, Hinds and Jasper Counties, Mississippi, have minority populations that comprise approximately 67.3 and 53.3 percent, respectively, of the total county populations. To further assess whether the minority population in the region of influence is substantially greater than the minority population in surrounding areas, we compared county and parish level demographics to the respective statewide proportions. The proportion of individual minority populations is greater than respective state level statistics in 22 of the 26 counties and parishes that make up the region of influence for the proposed Project (Table 3.9.2-1). These statistics are indicative of a potentially disproportionate effect on minority populations.

The majority of the counties and parishes traversed by the proposed Project have unemployment rates that are similar to or lower than the respective statewide levels, but 11 of the counties or parishes within the region of influence have unemployment rates that are higher than the respective state levels (Table 3.9.3-1). These include Fannin, Lamar, Red River, Morris, and Cass Counties, Texas (unemployment rates ranging from 5.5 to 6.1 percent relative to a statewide average of 4.0 percent); Claiborne, Lincoln, Morehouse, Richland, and Madison Parishes, Louisiana (unemployment rates ranging from 4.2 to 6.0 percent relative to a statewide average of 4.0 percent); and Choctaw County, Alabama (unemployment rate of 5.1 percent relative to a statewide average of 3.6 percent). Additionally, per capita income figures are lower in 20 of the 26 counties and parishes within the region of influence as compared to statewide income data (Table 3.9.3-1), and per capita income within these counties and parishes, ranges from 5.4 to 23.2 percent lower than the respective statewide values. Similarly, the percentage of the population below the poverty level is higher than statewide percentages in 17 of the counties or parishes within the region of influence, most notably Louisiana, where seven of ten parishes have poverty rates ranging from 1.3 percent to 10.1 percent higher than statewide percentages. These statistics are indicative of a potentially disproportionate effect on low-income communities.

Given the potential for disproportionate effects on minority and low-income communities, we have considered whether potential Project-related effects would be adverse. As described above in this section, the proposed Project would have negligible to minor effects on socioeconomic characteristics and economies within the region of influence and many of the Project-related effects, while minor, would generally be viewed as positive. As discussed throughout this EIS, any potentially negative environmental effects associated with the proposed Project would be minimized and/or mitigated, as applicable. Further, the proposed Project would generally be located in rural areas of low population density. Although the racial and economic composition of the counties and parishes traversed by the proposed Project route shows some deviations from state-level statistics, as described above, there is no

evidence that the proposed Project would cause a disproportionate share of adverse environmental or socioeconomic impacts on any racial, ethnic, or socioeconomic group.

The primary health issue related to the proposed Project would be the risk associated with an unanticipated pipeline failure. Section 3.12 discusses the localized risks to public safety that would result from a pipeline failure and describes how applicable safety regulations and standards would minimize the potential for these risks. The routing of the proposed Project through rural, sparsely populated areas would further minimize the number of persons who would be at risk of injury due to a pipeline failure, and there is no evidence that such risks would be disproportionately borne by any racial, ethnic, or socioeconomic group.

To summarize, though the racial and economic composition of the counties and parishes traversed by the proposed Project route shows some deviations from state-level statistics, as described above, there is no evidence that the proposed Project would cause a disproportionate share of adverse environmental or socioeconomic impacts on any racial, ethnic, or socioeconomic group. The socioeconomic impacts of the proposed Project are generally not considered to be adverse, and there is no evidence that the slight risk of a pipeline failure would be disproportionately borne by any group.

3.9.9.2 Public Participation Strategies

Executive Order 12898 also emphasizes the importance of providing opportunities for community input into the NEPA process. The mailing list for the Project was initiated when the notification announcing the pre-filing environmental review process for the proposed Project was first issued in March 2007 and has been continuously updated during the EIS process. The original mailing list included all affected property owners along the proposed facilities, as identified by MEP, without any distinction based on minority or income status. Though no tribal lands would be crossed by the proposed Project route, the mailing list also included Native American tribes identified as having an interest in the general Project area.

In addition, MEP mailed notification letters to landowners, government officials, and the general public informing them about the project and inviting them to attend open houses to learn about the Project and to ask questions and express their concerns. Eight open houses were held in the project area in March and April 2007. These meetings were held in non-government buildings such as community centers and local hotels. Notifications of these open houses were also published in local newspapers. The FERC staff also held six public scoping meetings in the Project area during May 2007 to provide property owners, municipalities, counties, special interest groups, and state and federal regulatory agencies an opportunity to comment on the Project. The dates and locations of the meetings were included in the NOI issued by the FERC and posted on the FERC Internet website. An additional FERC-sponsored public site visit was held in August 2007 to give the public an opportunity to learn more about the Project modifications proposed by MEP, as announced in a Supplemental NOI issued by the FERC.

The distribution list for the Draft EIS included affected landowners; federal, state, and local government agencies; elected officials; environmental and public interest groups; Native American tribes; local libraries and newspapers; and other parties who provided scoping comments, asked to remain on the mailing list, or wrote to the FERC or one of the cooperating agencies asking to receive a copy of the document. A formal notice was published in the Federal Register, indicating that the Draft EIS was available and had been mailed to individuals and organizations on the distribution list prepared for the proposed Project (see Appendix A). The FERC staff also held six public Draft EIS comment meetings in the Project area during March 2008 to provide property owners, municipalities, counties, special interest groups, and state and federal regulatory agencies an opportunity to comment on the Project. The dates and locations of the meetings were included in the Draft EIS issued by the FERC and posted on the FERC

Internet website. The FERC also accepted written comments on the proposed Project during the Draft EIS comment period, which was open for 45 days after public notice of the availability of the Draft EIS. Section 1.4 further describes the public notification and participation process completed for the proposed Project, and Section 3.10 describes contacts with Native American tribes that traditionally occupied, or currently occupy, the Project area.

3.9.9.3 Environmental Justice Summary

In summary, information about the proposed Project has been readily available to the public and no disproportionately high and adverse human health or environmental effects on minority and/or low-income communities or Native American tribes have been identified. Furthermore, Project construction would provide some short-term job opportunities in the region of influence. The only long-term socioeconomic effects of the Project are likely to be beneficial, based on the increase in tax revenues that would accrue to the counties and parishes affected by the Project. A more specific discussion about the Project-related impacts on residential areas, air quality and noise, and safety is presented in sections 3.8, 3.11, and 3.12 respectively. Cumulative impacts are discussed in section 3.13.

3.10 CULTURAL RESOURCES

Section 106 of the NHPA, as amended, requires FERC to take into account the effect of its undertakings (including the issuance of certificates) on any properties listed in, or eligible for listing in, the NRHP and to provide the ACHP an opportunity to comment on the undertaking. MEP, as a non-federal party, is assisting the FERC in meeting its obligation under Section 106 of the NHRP by conducting the field surveys and evaluations required by ACHP regulations in 36 CFR 800.

3.10.1 Results of Cultural Resources Survey

MEP conducted initial cultural resources surveys during the spring and summer 2007 for the proposed Project pipeline, compressor stations, ancillary facilities, and associated access roads within Oklahoma, Texas, Louisiana, Mississippi, and Alabama. Additionally, MEP conducted supplemental cultural resource surveys at later dates along proposed Project reroutes and at extra work areas and access roads that were not previously surveyed. Archeological surveys of the proposed pipeline route were conducted within a 300-foot-wide survey corridor in areas where the proposed Project route would not parallel existing utility corridors. Where the proposed route parallels an existing utility corridor, the survey corridor was expanded to include an additional 50- to 100-foot-wide corridor within the existing utility right-of-way. MEP also completed surveys for historic structures within the Project area of potential effect (APE), which encompassed the areas surveyed for archeological resources and extended into additional locations where the proposed Project could alter existing topography or vegetative cover within the viewshed of an identified historic architectural resource. As of May 2008, MEP had completed cultural surveys along approximately 96.6 percent (488.6 miles) of the proposed Project mainline route, and the full length of the proposed CenterPoint Lateral route, where survey permission was obtained. In addition, MEP has also completed cultural surveys along 144 of 157 proposed Project access roads, at 21 of the 29 proposed offsite pipe storage and contractor yards, 10 of the 14 proposed meter stations, and all of the proposed compressor station facilities. The area remaining to be surveyed consists of areas where survey permissions were not obtained, recently adopted route variations, and/or other extra work areas. Surveys at these areas are anticipated to be completed as survey permission is obtained.

3.10.1.1 Oklahoma

The survey within the Oklahoma portion of the proposed Project identified a single prehistoric site. This resource represents an isolated find, which is not considered eligible for listing in the NRHP,

and no further work was recommended. Similarly, no NRHP-eligible historic structures within the Project APE were identified in Oklahoma.

MEP submitted cultural resources survey reports to the Oklahoma Historical Society and Oklahoma Archaeological Survey, which share review responsibilities of the State Historic Preservation Office (SHPO) in Oklahoma, on August 27, 2007, and September 4, 2007, respectively, and requested concurrence with these findings. MEP identified one prehistoric site (isolated find) in Oklahoma, but determined it to be ineligible for listing on the NRHP. Subsequently, addendum cultural resource reports for the supplemental surveys were submitted to the Oklahoma SHPO on December 19, 2007 and March 21, 2008. MEP's December 19, 2007 addendum and March 21, 2008 report filings indicated that no previously recorded or newly discovered archeological sites, as well as no historic sites, were observed in the new survey corridors. In a correspondence dated November 12, 2007, the Oklahoma Archaeological Society, in cooperation with the Oklahoma SHPO, concurred with the findings of the August 27 and September 4, 2007 submittals. Additionally, in a correspondence dated January 4, 2008, the Oklahoma SHPO concurred with the findings in the December 19, 2007 submittal. Consultation with the Oklahoma SHPO regarding the findings of the March 21, 2008 addendum report, as well as any unsurveyed portions of the proposed route, is pending. The Oklahoma SHPO indicated to the FERC that it anticipated additional consultation with MEP for unsurveyed portions of the proposed route, in its letter dated March 10, 2008 The SHPO also questioned whether MEP was delegated the authority to initiate Section 106 review with the SHPO directly. Under the FERC's regulations at 18 CFR Part 157.206(b) and 380, project sponsors, with the assistance of consultants, are granted authority to act on the FERC's behalf at certain steps in the Section 106 process. Project sponsors are requested by the FERC to initiate consultations with the SHPOs and other affected entities and to carry through with acquiring a certain level of information to assist the FERC in complying with the NEPA and Section 106 of the NHPA.

3.10.1.2 Texas

The survey within the Texas portion of the proposed Project identified or relocated a total of 28 prehistoric resource sites, including 15 prehistoric sites, seven sites with combined prehistoric and historic characteristics, and six isolated finds of prehistoric material. Five of these sites were previously recorded. Four of the prehistoric sites, (41CS141, 41FK127, 41TT880, and 41TT885) and one combined prehistoric and historic site (41FN86) were determined to be potentially eligible for the NRHP, but MEP indicated that either the sites would be avoided or that Phase II testing would occur. The remaining sites are not considered eligible for listing in the NRHP, and no further work is recommended.

Seven historic sites and one architectural site, all previously unrecorded, in addition to the seven sites with combined prehistoric and historic characteristics noted above, are located in the APE of the proposed Project in Texas, but none of these resources are recommended as eligible for listing in the NRHP.

MEP submitted the cultural resources survey report to the Texas Historical Commission, which functions as the SHPO in Texas, on August 27, 2007, and requested concurrence with these findings. Supplemental addendum reports were submitted in December 2007 and in March 2008. Consultation with the Texas SHPO regarding the original report, addendum report and unsurveyed portions (approximately 3.9 miles) of the proposed route is pending. The Texas SHPO indicated to the FERC that it anticipated receipt of a revised draft survey report from MEP, as well as continued consultation with MEP for unsurveyed portions of the proposed route, in its letter dated March 24, 2008.

A landowner in Franklin County commented that the presence of a prehistoric archaeological site on his property resulted in MEP deviating from an existing right-of-way and creating another right-of-way across his property. The site that MEP is avoiding is currently unevaluated for eligibility for the

NRHP and should undergo Phase II testing. We would not recommend creating a new right-of-way for a site which is not recommended eligible for listing in the NRHP.

3.10.1.3 Louisiana

The survey within the Louisiana portion of the proposed Project identified or relocated a total of 27 prehistoric resource sites, including eight prehistoric sites, eight sites with combined prehistoric and historic characteristics, and 11 isolated finds of prehistoric material. Of these, one previously recorded (16OU183) and one newly identified prehistoric site (16MA319) are recommended as potentially eligible for listing in the NRHP. If avoidance of these sites would not be feasible, Phase II testing would be conducted to further characterize the sites and determine their NRHP eligibility status. Prehistoric site 16MA325 was previously considered to be potentially eligible for listing in the NRHP. However, MEP reported in a management summary submitted to the Louisiana SHPO dated March 26, 2008 that the result of Phase II archaeological testing indicated that site 16MA325 should be recommended to be ineligible for the NRHP. A response regarding the management summary has not yet been received from the Louisiana SHPO.

Eleven historic sites and three architectural sites were recorded in the APE of the proposed Project in Louisiana, in addition to the eight sites with combined prehistoric and historic characteristics noted above. None of the historic sites are recommended as eligible for listing in the NRHP, and no further work is recommended.

MEP submitted the cultural resources survey report to the Louisiana Department of Culture, Recreation & Tourism, Divisions of Archaeology and Historic Preservation, which functions as the SHPO in Louisiana, on August 30, 2007 and submitted addendum reports in December 2007 and March 2008. Concurrence from the Louisiana SHPO for their August 2007 and December 2007 reports was received on October 19, 2007 and February 22, 2008, respectively. Consultation with the Louisiana SHPO regarding the March 2008 addendum report and the management summary discussed above, as well as unsurveyed portions (approximately 7.2 miles) of the proposed route, is ongoing.

We received a comment from landowners in Lincoln Parish that the proposed route would affect the setting of their 1880's dog trot home by removing forest between the house and State Highway 152. MEP has rerouted the proposed project off of this property.

3.10.1.4 Mississippi

The survey within the Mississippi portion of the proposed Project identified or relocated a total of 86 prehistoric resource sites. These include 60 prehistoric sites, 7 sites with combined prehistoric and historic characteristics, and 19 isolated finds of prehistoric material. Of these, one previously identified site (22HI526) was recommended as eligible for listing in the NRHP, and this resource would be completely avoided by a realignment of the proposed pipeline route. Additionally, two of the previously unidentified sites (22CK608 and 22SI607) are recommended as eligible for listing in the NRHP and would either be avoided or subject to data recovery based on a management summary submitted by MEP to the Mississippi SHPO on March 26, 2008. One additional site (22CK611) is recommended to be potentially eligible for listing in the NRHP and would either be avoided or evaluated further through Phase II testing. Site 22SM1308, which was previously identified as potentially eligible for listing in the NRHP, was recommended to be ineligible for listing based on Phase II archaeological testing as described in the above-mentioned management summary. The Mississippi SHPO has not yet responded to the management summary.

MEP located nine historic sites in addition to the seven sites with combined prehistoric and historic characteristics noted above. Only site 22SI607 (noted above), which had both prehistoric and historic components, was recommended to be eligible for listing in the NRHP.

The proposed Project would cross the historic Natchez Trace Parkway near Parkway MP 75 via HDD. Appendix I contains a detailed discussion of the Parkway crossing.

MEP submitted the cultural resources survey report to the Mississippi Department of Archives and History, which functions as the SHPO in Mississippi, on August 28, 2007. In a correspondence dated October 15, 2007, the Mississippi SHPO concurred with the findings of the August 28, 2007, submittal. In December 2007 and March 2008 MEP submitted the findings for its subsequent studies regarding reroutes, access roads, and areas where survey permission was previously denied. MEP's consultation with SHPO regarding the December 2007 addendum report, the March 2008 survey addendum report, and the March 2008 management summary, as well as unsurveyed portions of the proposed route (approximately 2.8 miles), is still pending.

3.10.1.5 Alabama

A review of the Alabama Archeological Site File revealed no records of previously identified archeological sites along the proposed Project route or access roads, and field surveys within the Alabama portion of the proposed Project did not identify any new archaeological resources. Similarly, MEP did not identify any historic structures within the APE for the proposed Project in Alabama.

MEP submitted the cultural resources survey report to the Alabama Historical Commission, which functions as the SHPO in Alabama, on August 27, 2007. In a correspondence dated September 27, 2007, the Alabama SHPO concurred that no properties eligible for listing in the NRHP would be affected along the surveyed portion of the proposed Project route. MEP filed addendum reports with the Alabama SHPO on December 19, 2007 and March 24, 2008 regarding completion of certain additional surveys along the proposed route in Alabama, and the Alabama SHPO replied that it concurred with the findings of the December 2007 addendum report in a letter dated January 7, 2008. The Alabama SHPO has not yet responded to MEP's addendum report filing dated March 24, 2008. Additional surveys are planned after survey permission is obtained along 3.5 miles of the proposed route in Alabama, and consultation with the Alabama SHPO for those areas is still pending. In its letter dated February 27, 2008 to the FERC, the Alabama SHPO indicated that it had concurred with all cultural resource findings submitted to it to date.

3.10.2 Unanticipated Discoveries Plan

MEP has developed an Unanticipated Discoveries Plan that outlines the procedures that would be followed in the event that unanticipated cultural resources of human remains are encountered during construction of the proposed Project. This plan has been submitted to the Oklahoma, Texas, Louisiana, Mississippi, and Alabama SHPOs. We find these plans to be acceptable.

3.10.3 Native American Consultation

MEP contacted 11 Native American groups regarding the proposed Project. These groups include the Alabama-Coushatta Tribe of Texas, The Caddo Nation of Oklahoma, the Cherokee Nation (Oklahoma), the Chickasaw Nation (Oklahoma), the Choctaw Nation of Oklahoma, the Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians (Louisiana), the Mississippi Band of Choctaw Indians, the Poarch Band of Creek Indians (Alabama), the Quapaw Tribe of Oklahoma, and the Tunica-Biloxi Indian Tribe of Louisiana. Letters were sent to representatives of each of these tribes on March 8, 2007,

requesting comments on the proposed Project and the identification of any cultural or religious sites significant to the tribe. Three tribes responded to MEP's initial consultation request. In an email dated March 19, 2007, the Historical Preservation Clerk for the Alabama-Coushatta Tribe of Texas indicated that they had no concerns or comments regarding the proposed Project. The Tribal Historic Preservation Officer with the Caddo Nation of Oklahoma responded on March 21, 2007, and stated that the proposed Project would cross ceded lands of the Caddo Nation and identified concerns that Traditional Cultural Properties, historic properties, and archaeological sites may be impacted by the proposed Project. In a response dated March 23, 2007, the Tribal Historic Preservation officer for the Choctaw Nation requested copies of the cultural resource reports for the states of Alabama, Mississippi, and Oklahoma.

On April 27, 2007, MEP sent follow-up letters to the eight tribes who had yet to respond to the initial mailing. The Coushatta Tribe of Louisiana responded by letter on May 3, 2007, indicating no concerns regarding the proposed Project. The Quapaw Tribe responded by email on May 3, 2007, and indicated that the proposed Project would pass through an area of interest to the Quapaw Tribe. The remaining six Native American groups have not yet responded to either request for consultation.

In response to their requests, MEP provided copies of the cultural resource reports for the states of Oklahoma, Louisiana, and Mississippi, and Alabama to the Quapaw (Oklahoma, Louisiana, and Mississippi portions of the proposed Project) and Choctaw Tribes (Alabama, Oklahoma, and Mississippi portions of the proposed Project) on August 27, 2007.

In addition, we received a response to our NOI for the proposed Project from the Caddo Nation of Oklahoma. In a letter dated April 9, 2007, the Tribal Historic Preservation Officer with the Caddo Tribe of Oklahoma requested consulting party status and for the FERC to consult with the tribe on a government-to-government basis regarding the proposed Project. MEP provided copies of the Project cultural resources reports to the Caddo Tribe of Oklahoma on December 20, 2007 and the Caddo Nation of Oklahoma was provided with a copy of the Draft EIS for review and comment.

3.10.4 General Impacts and Mitigation

MEP has not completed cultural resources surveys along approximately 3.4 percent (17.4 miles) of the proposed Project mainline route where survey permissions were not obtained, at recently adopted route variations, and at some other extra work areas. The completion of the surveys and evaluations within these areas, as well as associated comments from the Oklahoma, Texas, Louisiana, Mississippi, and Alabama SHPOs are required to complete the process of compliance with Section 106 of the NHPA.

To ensure that required cultural resource studies and consultation are completed for all proposed Project components and that the FERC's responsibilities under Section 106 of the NHPA are met, **we recommend that:**

- **MEP should defer implementation of any treatment plans/measures (including archaeological data recovery); construction of facilities; and use of all staging, storage, or temporary work areas and new or to-be-improved access roads until:**

  a. **MEP files with the Secretary cultural resources survey and evaluation reports, any necessary treatment plans, and the comments of the Oklahoma, Texas, Louisiana, Mississippi, and Alabama SHPOs on the reports and plans; and**

  b. **The Director of OEP reviews and approves all cultural resources survey reports and plans and notifies MEP in writing that treatment plans/procedures may be implemented and/or construction may proceed.**

All material filed with the Secretary containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE."

3.11 AIR QUALITY AND NOISE

3.11.1 Air Quality

Air quality would be affected by construction and operation of the proposed Project. Though air emissions would be generated by operation of equipment during construction of the pipeline and aboveground facilities proposed by MEP, most air emissions associated with the proposed Project would result from long-term operation of the proposed compressor station facilities.

As described in Section 2.1, MEP proposes to construct the Lamar Compressor Station south of Paris near Broadway Junction in Lamar County, Texas; the Atlanta Compressor Station south of Atlanta in Cass County, Texas; the Perryville Compressor Station west of Spencer in Union Parish, Louisiana; the Vicksburg Compressor Station southeast of Vicksburg in Warren County, Mississippi; and the Delhi Booster Station south of Delhi in Richland Parish, Louisiana. At each station, the natural gas compressors would be powered by four-stroke, lean-burn, natural gas-fired reciprocating engines, but the number and power of the installed compression would vary. MEP would install one 6,135-hp International Standards Organization (ISO)-rated and four 8,180-hp ISO-rated compressor units at the Lamar Compressor Station, for a total installed capacity of approximately 38,855 hp. At the Perryville Compressor Station, MEP would install four 8,180-hp ISO-rated compressor units, for a total installed capacity of approximately 32,720 hp. MEP would install two 6,135-hp ISO-rated compressor units at the Atlanta Compressor Station and three such units at the Vicksburg Compressor Station, for a total installed capacity of approximately 12,270 hp and 18,405 hp, respectively. Two 4,735-hp ISO-rated compressors would be installed at the Delhi Booster Station to provide a total capacity of 9,470 hp. The compressor units would be housed in compressor buildings constructed at each compressor station. In addition to the compressor units, MEP would install one 750-kilowatt (kW) emergency generator powered by a natural gas-fired reciprocating engine, a 1.1-million British thermal unit (MMBTU) per hour heater, various oil tanks, truck loading/unloading equipment, and an optional parts washer at each compressor station.

As described in Section 2.4, installation of the Project compressor station facilities would be completed in phases, as proposed. Initially, only the Lamar and Perryville Compressor Stations and the Delhi Booster Station would be constructed and placed in service. MEP indicates that the timing for construction of the Atlanta and Vicksburg Compressor Stations and expansion to the fully proposed Project transport capacity would be based on shipper demand, but it anticipates constructing those facilities within the first 5 years of in-service operations. Our analysis of air emissions and the resulting effects on air quality assumes operation of the total compression capacity at all of the proposed stations.

3.11.1.1 Existing Air Quality

Ambient air quality is protected by federal and state regulations. The CAA designates six pollutants as criteria pollutants for which the National Ambient Air Quality Standards (NAAQS) are promulgated. The NAAQS for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10} particulates and $PM_{2.5}$ particulates), carbon monoxide (CO), ozone (O_3), and lead were set to protect human health (primary standards) and human welfare (secondary standards). These standards are summarized in Table 3.11.1-1. State air quality standards cannot be less stringent than the NAAQS; Oklahoma, Texas, Louisiana, Mississippi, and Alabama have adopted ambient air quality standards that are the same as the NAAQS. The NAAQS program also classifies areas where sufficient data are

available as either attainment (does not exceed NAAQS) or nonattainment (exceeds NAAQS). The counties and parishes in which the Project would be located are in attainment for all criteria pollutants.

TABLE 3.11.1-1
National Ambient Air Quality Standards

Pollutant	Time Frame	Primary	Secondary
Particulate matter less than 10 microns in diameter	24-hour[a]	150 μg/m^3	150 μg/m^3
Particulate matter less than 2.5 microns in diameter	Annual[b]	15 μg/m^3	15 μg/m^3
	24-hour[c]	35 μg/m^3	35 μg/m^3
Sulfur dioxide	Annual	0.030 ppm (80 μg/m^3)	N/A
	24-hour[a]	0.014 ppm (365 μg/m^3)	N/A
	3-hour[a]	N/A	0.5 ppm (1,300 μg/m^3)
Carbon monoxide	8-hour[a]	9 ppm (10,000 μg/m^3)	None
	1-hour[a]	35 ppm (40,000 μg/m^3)	None
Nitrogen dioxide	Annual	0.053 ppm (100 μg/m^3)	0.053 ppm
Ozone	8-hour[d]	0.08 ppm (157 μg/m^3)	0.08 ppm
Lead	Quarterly	1.5 μg/m^3	1.5 μg/m^3

Notes:
μg = microgram(s).
m^3 = cubic meter(s).
N/A = not applicable.
ppm = part(s) per million.

[a] Not to be exceeded more than once per year.
[b] To attain this standard, the 3-year average of the weighted annual mean particulate matter less than 2.5 microns in diameter concentrations from single or multiple community-oriented monitors must not exceed 15.0 μg/m^3.
[c] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 μg/m^3.
[d] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations, measured at each monitor within an area over each year, must not exceed 0.08 ppm.

3.11.1.2 Regulatory Requirements

The CAA, 42 USC 7401 et seq., as amended in 1977 and 1990, is the basic federal statute governing air pollution. The provisions of the CAA that are potentially relevant to the proposed Project include the following, which are discussed further below:

- Air Quality Control Regions (AQCRs);
- Prevention of Significant Deterioration (PSD);
- New Source Review (NSR);
- New Source Performance Standards (NSPS);
- Maximum Achievable Control Technology (MACT) standards;
- Title V Operating Permits;
- General Conformity; and
- Chemical Accident Prevention Provisions.

In addition, the proposed Project would be subject to applicable Oklahoma, Texas, Louisiana, Mississippi, and Alabama state regulations that are more stringent than the federal regulations.

Air Quality Control Regions

Areas of the U.S. are categorized as Class I, Class II, or Class III. Class I areas are designated specifically as pristine natural areas or areas of natural significance and receive special protections under the CAA because of their good air quality. Class III designations, intended for heavily industrialized zones, can be made only on request and must meet all requirements outlined in 40 CFR 51.166. The remainder of the United States is designated as Class II.

The Project, as proposed, would be located in a Class II area. The nearest Class I areas are the Caney Creek Wilderness, which is located southeast of Mena, Arkansas, approximately 87 miles north of the proposed Atlanta Compressor Station, and the Breton National Wilderness Area, within the Breton National Wildlife Refuge which is located approximately 217 miles southeast of the Vicksburg Compressor Station. Given the types and quantities of the emissions from the compressor stations involved in the proposed project and the distance to the nearest Class I area, no adverse impacts on Class I areas are expected.

Prevention of Significant Deterioration

The PSD review regulations apply to proposed new major sources or major modifications to existing major sources located in an attainment area. The PSD regulations (40 CFR 52.21) define a major source as any source type belonging to a list of named source categories that emit or have the potential to emit 100 tons per year (tpy) or more of any regulated NSR pollutant. A major source under PSD also can be defined as any source not on the list of named source categories with the potential to emit such pollutants in amounts equal to or greater than 250 tpy. Modifications to existing major sources have lower emission thresholds, called "significant emission increases," and amounts over these thresholds trigger PSD review. The PSD review evaluates existing ambient air quality and the potential impacts of the proposed source on ambient air quality (noting in particular whether the source will contribute to any violation of the NAAQS), and reviews the best available control technology (BACT) in order to minimize emissions. The PSD regulations contain restrictions on the degree of ambient air quality deterioration that will be allowed. These increments for criteria pollutants are based on the PSD review classification of the area. Class I areas have the lowest increment of permissible deterioration, which essentially precludes development near these areas. Class II areas are designed to allow moderate, controlled growth. Class III areas allow for heavy industrial use. As noted previously, the proposed Project would be located in a Class II area.

The proposed Project would not include facilities or operations included on the list of named source categories to which the 100-tpy trigger applies. Further, the proposed Project would not exceed emissions of 250 tpy for any regulated NSR pollutant at any compressor station site. Table 3.11.1-2 summarizes the anticipated emissions from each compressor station for each regulated NSR pollutant, including oxides of nitrogen (NO_x), CO, volatile organic compounds (VOCs), PM_{10}, SO_2, and hazardous air pollutants (HAPs). The net emissions from each compressor station for each of the regulated NSR pollutants would be less than the major source applicability thresholds, and PSD permitting is therefore not applicable. The proposed Project would be considered a "minor source" with regards to PSD review.

TABLE 3.11.1-2
Estimated Net Emissions for the Proposed Midcontinent Express Pipeline Project

Pollutant	Total Facility Emissions[a] (tpy)					Applicability Threshold (tpy)
	Lamar Compressor Station	Atlanta Compressor Station	Perryville Compressor Station	Vicksburg Compressor Station	Delhi Booster Station	
NO_x	188.9	60.6	159.3	90.2	65.4	250/100[b]
CO	91.0	31.7	77.3	45.3	20.3	250/100[b]
VOC	121.3	70.8	103.4	102.3	88.4	250/100[b]
PM, $PM_{10/2.5}$	11.3	4.1	9.5	6.1	3.2	250/100[b]
SO_2	15.2	0.2	12.8	0.4	4.3	250/100[b]
CH_2O	14.3	4.5	12.1	6.8	2.7	10[c]
Total HAPs	36.3	12.4	30.5	18.6	8.8	25[c]

Notes:
tpy = tons per year.
[a] Includes emissions from engines and auxiliary generators, tanks, fugitives, parts washers, flash emissions, heaters, blowdown, and loading.
[b] Reflects Prevention of Significant Deterioration New Source and Title V applicability thresholds of 250 tpy and 100 tpy, respectively. Note that PM is not a criteria pollutant regulated under the Title V program, but is regulated under the PSD program.
[c] Reflects national emissions standards for hazardous air pollutants (HAPs) and Title V applicability thresholds of 10 tpy for a single HAP and 25 tpy for combined HAPs. The PSD program does not have HAP threshold limits.

New Source Performance Standards

The NSPS, codified at 40 CFR 60 and incorporated by reference in 30 Texas Administrative Code (TAC) Rule 101.20, Oklahoma Administrative Code (OAC) 252:100-2-1, Louisiana Administrative Code (LAC) 33.III.3303, MDEQ regulations APC-S-1 Section 6.3, and ADEM Administrative Code R.335-3-10-.01(1), establish requirements for new, modified, or reconstructed units in specific source categories. The NSPS requirements include emission limits, monitoring, reporting, and record keeping. The following NSPS requirements were identified as potentially applicable to the specified sources at the proposed compressor stations.

Subpart Kb of 40 CFR 60, *Standards of Performance for Volatile Organic Liquid Storage Vessels*, lists affected emission sources as storage vessels containing volatile organic liquids. Regulatory applicability is dependent on the construction date, size, and vapor pressure of the storage vessel and its contents. Subpart Kb applies to new tanks, unless otherwise exempted, with a storage capacity between 75 cubic meters (m^3; 19,813 gallons) and 151 m^3 (39,890 gallons) that contain VOCs with a maximum true vapor pressure greater than or equal to 15.0 kilopascals (kPa). Subpart Kb also applies to tanks with a storage capacity greater than or equal to 151 m^3 that contain VOCs with a maximum true vapor pressure greater than or equal to 3.5 kPa. Each of the proposed compressor stations would be equipped with an 8,000-gallon oil tank and other smaller tanks, all of which are well below the regulated capacity. Therefore, the proposed Project would not be subject to NSPS Subpart Kb standards.

On June 12, 2006, EPA proposed a new NSPS (Subpart JJJJ) for spark ignition internal combustion engines (SI ICE). The proposed rule was published at 71 FR 33804. Each proposed Project compressor station facility would be outfitted with non-emergency engines in excess of 500 hp (i.e., the proposed compressor units would be powered by natural gas-fired reciprocating engines). Owners and

operators of such engines manufactured after July 1, 2007, would be required to meet the new emission limits proposed by EPA, which include 2 grams/brake horsepower-hour (g/BHP-hr) NO_x, 4 g/BHP-hr CO, and 1 g/BHP-hr VOC. Though it is likely that the non-emergency engines installed at the proposed Project compressor stations would be manufactured after July 1, 2007, uncontrolled emissions from the proposed engines would be less than the proposed standards. MEP also proposes to install emergency generators powered by natural gas-fired reciprocating engines at each compressor station. Owners and operators of such engines of all sizes manufactured after January 1, 2009, also would be required to meet the new emission limits for NO_x, CO, and VOC proposed by EPA. It is likely that the emergency use engines installed at the Lamar and Perryville Compressor Stations and Delhi Booster Station would be manufactured before January 1, 2009, and thus would not be subject to the new standards. Given the phased construction schedule proposed by MEP (see Section 2.4), the emergency use engines at the Atlanta and Vicksburg Compressor Stations could be manufactured after January 1, 2009; if so, they would be subject to Subpart JJJJ of the proposed rules.

No other NSPS are applicable to the proposed Project.

Maximum Achievable Control Technology Standards

MACT standards are intended to reduce emissions of air toxics or HAPs through installation of control equipment rather than enforcement of risk-based emission limits. In general, applicability is triggered if potential emissions are greater than 10 tpy of any single listed HAP or if total HAP emissions exceed 25 tpy for the listed HAPs. Sources that exceed these emission levels are known as major HAP sources. Sources that emit at less than the major source levels are known as area sources. On June 12, 2006, EPA proposed amendments to the reciprocating internal combustion engine (RICE) MACT standard at 71 FR 33804. The proposed amendments would expand the scope of the existing RICE MACT to include RICE at area sources. The rule will impose a 1 g/BHP-hr VOC standard on non-emergency engines manufactured after July 1, 2007. The natural gas-fired reciprocating engines that would power the compressor units at the proposed Project compressor station facilities would meet this standard. MEP also proposes to install emergency generators powered by natural gas-fired reciprocating engines at each compressor station. Owners and operators of such engines of all sizes manufactured after January 1, 2009, also would be required to meet the new emission limits for VOC proposed by EPA. It is likely that the emergency use engines installed at the Lamar and Perryville Compressor Stations and Delhi Booster Station would be manufactured before January 1, 2009, and thus would not be subject to the new standards. Given the phased construction schedule proposed by MEP (see Section 2.4), the emergency use engines at the Atlanta and Vicksburg Compressor Stations could be manufactured after January 1, 2009; if so, they would be subject to Subpart ZZZZ of the proposed rules.

Title V Permitting

The Title V permit program, as described in 40 CFR 70, requires sources of air emissions with criteria pollutant emissions that reach or exceed major source levels to obtain federal operating permits. These permits list all applicable air regulations and include a compliance demonstration for each applicable requirement. The major source threshold levels in attainment areas are 100 tpy of NO_x, SO_2, CO, PM_{10}, $PM_{2.5}$, and VOC; 10 tpy of any single HAP; or 25 tpy of combined HAPs. As shown in Table 3.11.1-2, the proposed Lamar, Vicksburg, and Perryville Compressor Stations would exceed these thresholds, and would therefore require Title V permits. The Atlanta Compressor Station, as well as the Delhi Booster Station, would not require Title V permits.

General Conformity

The General Conformity Rule is codified in Title 40 CFR Part 51, Subpart W and Part 93, Subpart B, determining Conformity of General Federal Actions to State or Federal Implementation Plans. A conformity determination must be conducted by the lead federal agency if a federal action's construction and operational activities is likely to result in generating direct and indirect emissions that would exceed the conformity threshold levels (*de minimis*) of the pollutant(s) for which an air basin is in nonattainment or maintenance. As stated in Section 3.11.1.1 above, the proposed project would be located in counties and parishes which are currently designated as attainment for all criteria pollutants. Therefore, the proposed project would not be subject to the General Conformity Rule.

Chemical Accident Prevention Provisions

EPA has established accidental release prevention and risk management plan requirements as part of 40 CFR Part 68 (Chemical Accident Prevention Provisions). Part 68 lists regulated substances along with thresholds for determining the applicability of the associated requirements. A risk management plan must be prepared if a facility stores a regulated substance in quantities greater than the published threshold in the single largest container.

Except for constituents of natural gas such as ethane and methane, the Project is not expected to produce, process, handle, or store any substance regulated under Part 68 in quantities exceeding applicability thresholds. Natural gas pipelines are not subject to Part 68 if they are subject to DOT requirements or to a state natural gas program certified by DOT (as is the case for the Project). In addition, the storage of natural gas incidental to transportation (i.e., natural gas taken from a pipeline during non-peak periods, placed in storage fields, and then returned to the pipeline when needed) is not subject to Part 68. Consequently, the Project would not be subject to Part 68 requirements.

State Regulations

In addition to the federal regulations described above, Oklahoma, Texas, Louisiana, Mississippi, and Alabama also have state air quality regulations. Subject to EPA approval, ODEQ, TCEQ, LDEQ, MDEQ, and ADEM manage statewide air permitting, compliance, and enforcement programs in Oklahoma, Texas, Louisiana, Mississippi, and Alabama, respectively. The Lamar Compressor Station would be authorized under TCEQ's NSR Permit program, and the Atlanta Compressor Station would be authorized under TCEQ's Standard Permit for Oil and Gas Facilities. The Perryville Compressor Station and Delhi Booster Station would both require an LDEQ Minor Source Permit, and the Vicksburg Compressor Station would require a state air emissions permit issued by MDEQ.

Pursuant to these permitting programs, MEP submitted air permit applications to TCEQ and LDEQ in September 2007, requesting authorization to construct and operate the Lamar Compressor Station and the Perryville Compressor Station and Delhi Booster Station, respectively. Responses from TCEQ and LDEQ are pending. Air permit applications for the Atlanta and Vicksburg Compressor Stations would be submitted to TCEQ and MDEQ, respectively, once a construction schedule for these Phase II facilities is identified (see Sections 2.4 and 3.11.1).

3.11.1.3 General Impacts and Mitigation

Construction Emissions

Air quality impacts associated with construction of the proposed Project would include emissions from fossil-fueled construction equipment and fugitive dust. However, such air quality impacts would

generally be temporary and localized. Large earth-moving equipment such as backhoes, bulldozers, pipe-stringers, and other mobile sources may be powered by diesel or gasoline and are sources of combustion emissions, including NO_x, CO, VOCs (a precursor of ozone), SO_2, PM_{10}, $PM_{2.5}$, and small amounts of air toxics. Air pollutants from construction equipment generally would be limited to the immediate vicinity of the construction area, and associated impacts to ambient air quality would be temporary. Additionally, MEP would maintain all fossil-fueled construction equipment in accordance with manufacturers' recommendations to minimize construction-related emissions.

The majority of air emissions during construction activities would be respirable particulate matter, both PM_{10} and $PM_{2.5}$, in the form of fugitive dust. Fugitive dust would result from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated would be a function of construction activities, soil type, moisture content, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Emissions would be greater during drier periods and in areas of fine-textured soils. The estimated construction emissions for the proposed Project are provided in Table 3.11.1-3.

TABLE 3.11.1-3
Estimated Construction Emissions for the Proposed Midcontinent Express Pipeline Project

Task/Source	Total Construction Emissions (tons)					
	NO_x	VOC	CO	SO_2	PM	CO_2
Compressor station construction						
Equipment engines	308	22	112	41	14	25,325
Fugitive dust					615	
Pipeline construction						
Equipment engines	395	139	1,194	102	85	24,736
Worker commuting	2	2	30	Neg.	Neg.	713
Delivery vehicles	Neg.	Neg.	Neg.	Neg.	Neg.	8
Fugitive dust					4,603	
Total	**705**	**163**	**1,336**	**143**	**5,317**	**50,782**

Note:
Neg. = Negligible
The majority of construction emissions are expected to occur in 2008, but some emissions will also occur until February 2009 when the project is expected to commence operation.

The ODEQ regulates fugitive dust from construction activities in areas that are nonattainment for particulate matter or are maintenance areas for particulate matter through OAC 252:100-29-3(1).

However, there are no particulate matter nonattainment areas or maintenance areas in Oklahoma. TCEQ regulates the emissions of particulate matter arising from unpaved streets, access roads, construction, and similar facilities through 30 TAC 111.141. The rule applies only to certain areas in El Paso and Harris Counties and is therefore not applicable to the proposed Project. LDEQ regulates these types of fugitive dust emissions through LAC 33.III.1305, which requires application of water or dust-retardant chemicals, or paving of roadways. MDEQ does not have a specific regulation for fugitive dust from roadways. ADEM regulates fugitive dust by restricting visible emissions of dust to the property where the dust is generated. Reasonable precautions such as use of water or dust control chemicals are required on unpaved roadways by ADEM Administrative Code R.335-3-4-.03.

MEP would employ proven construction practices, such as water sprays, to control fugitive dust emissions during construction. Additionally, all areas disturbed by construction would be stabilized in accordance with MEP's Plan. Therefore, fugitive dust emissions during construction would be minor and of short duration.

Operations Emissions

The five proposed Project compressor stations would emit air pollutants from combustion of natural gas to drive the compressor units, and in association with the periodic operation of the emergency generators. Table 3.11.1-2 summarizes the anticipated emissions from each compressor station for NO_x, CO, VOC, PM_{10}, $PM_{2.5}$, SO_2, and HAPs. Compressor station emissions would be minimized by using oxidation catalyst control technology designed to reduce CO and VOC, including formaldehyde, emissions. The use of clean-burning natural gas as fuel for the reciprocating engines at the compressor stations would also minimize SO_2 and PM emissions.

MEP conducted dispersion air modeling using EPA's SCREEN 3 model to assess the impact of operation of the proposed compressor station facilities on ambient air quality. The impact on ambient NO_x, CO, and PM_{10} concentrations was evaluated for the Lamar and Perryville Compressor Stations, which are the stations that would be expected to have the greatest emissions during operation. The impact on ambient NO_x concentrations was also evaluated for the Atlanta and Vicksburg Compressor Stations and the Delhi Booster Station. $PM_{2.5}$ was also analyzed for the Delhi Booster Station. The results of that analysis are presented in Table 3.11.1-4. Combination of the predicted compressor station emissions for NO_x, CO, $PM_{2.5}$, and PM_{10} with background levels of these criteria pollutants would result in concentrations that are well below the NAAQS. Therefore, emissions from the proposed Project compressor stations for these criteria pollutants would not be expected to result in significant effects to ambient air quality for the modeled pollutants

TABLE 3.11.1-4
Estimated Emissions Impacts for the Proposed Midcontinent Express Pipeline Project

Compressor Station	Pollutant	Averaging Period	Modeled Results (µg/m^3)	Background Levels (µg/m^3)	Total Impact (µg/m^3)	National Ambient Air Quality Standard (µg/m^3)
Lamar	NO_x	Annual mean	12.6	9.7	22.2	100
	PM_{10}	Annual mean	0.7	24.0	24.7	50
	PM_{10}	24-hour	3.4	63.0	66.4	150
	CO	8-hour	63.9	3,029.0	3,092.9	10,000
	CO	1-hour	91.2	4,777.0	4,868.2	40,000
Perryville	NO_x	Annual mean	19.5	9.7	29.2	100
	PM_{10}	Annual mean	0.7	33.0	33.7	50
	PM_{10}	24-hour	3.7	82.0	85.7	150
	CO	8-hour	125.7	3,029.0	3,154.7	10,000
	CO	1-hour	179.6	4,777.0	4,956.6	40,000
Atlanta	NO_x	Annual mean	11.8	9.7	21.4	100
Vicksburg	NO_x	Annual mean	18.9	34.4	53.3	100
Delhi	NO_x	Annual mean	10.5	34.4	44.9	100
	$PM_{2.5}$	Annual mean	0.5	12.0	12.5	15
	$PM_{2.5}$	24-hour	2.7	29.7	32.4	35

MEP also performed $PM_{2.5}$ modeling using AERMOD for the Lamar and Perryville compressor stations. The modeled annual impact from the Lamar Compressor Station, 0.81 μg/m^3 was less than the proposed annual $PM_{2.5}$ Significant Impact Level (SIL) of 1.00 μg/m^3 and impacts are therefore less than significant. The modeled high first high 24-hour impact from the Lamar Compressor Station, 8.53 μg/m^3 was higher than the proposed 24-hour $PM_{2.5}$ SIL of 5.0 μg/m^3 and therefore cumulative impact modeling was performed. Attainment of the 24-hour $PM_{2.5}$ standard is achieved if the 3-year average of the 98th percentile of monitored data falls below the NAAQS. Therefore for the cumulative modeling exercise, the modeled high 8th highest value was used to represent the 98th percentile value. The modeled high 8th high 24-hour cumulative impact was 5.67 μg/m^3. Modeled cumulative impacts are added to the existing measured background pollutant concentration to arrive at a total pollutant concentration to compare to the NAAQS. There are no $PM_{2.5}$ monitors in the immediate vicinity of the Lamar Compressor Station. The nearest $PM_{2.5}$ monitor is located approximately 77.6 miles (125 km) from the Lamar Compressor Station, and a total of 21 $PM_{2.5}$ monitors are located approximately 77.6 to 124.2 miles (125 to 200 km) from the compressor station. The majority of these $PM_{2.5}$ monitors are located in the Dallas/Fort Worth metropolitan area or other locations not representative of the Lamar Compressor Station site. Two potentially representative $PM_{2.5}$ monitors were selected in consultation with the Texas Commission on Environmental Quality (TCEQ) air dispersion modeling group. Monitor number 482030002 is located in a rural area of Harrison County, Texas, similar to the Lamar Compressor Station site. Monitor number 400190295 is located in Ardmore, Carter County, Oklahoma. The county-wide $PM_{2.5}$ emission inventory for the most recent year available to TCEQ (2001) was 2,170 tons for Lamar County, Texas, 4,094 tons for Harrison County, Texas, and 2,092 tons for Carter County, Oklahoma. The Carter County, Oklahoma monitor was selected on the basis of similar county-wide emissions most similar to Lamar County, Texas. The modeled high 8th high 24-hour cumulative impact of 5.67 μg/m^3 was added to the 3-year average 98th percentile 24-hour background concentration measured at monitor 400190295 in Ardmore, Carter County, Oklahoma of 24.33 μg/m^3. The total 30.0 μg/m^3 was below the 24-hour $PM_{2.5}$ NAAQS of 35.0 μg/m^3. Based on this result, operation of the Lamar Compressor Station will not prevent attainment of the $PM_{2.5}$ NAAQS.

The modeled annual impact from the Perryville Compressor Station, 0.67 μg/m^3, was less than the proposed annual $PM_{2.5}$ SIL of 1.00 μg/m^3 and impacts would therefore be less than significant. The modeled high first high 24-hour impact from the Perryville Compressor Station, 9.17 μg/m^3 was higher than the proposed 24-hour $PM_{2.5}$ SIL of 5.0 μg/m^3 and therefore cumulative impact modeling was performed. The modeled high 8th high 24-hour cumulative impact of 4.74 μg/m^3 was added to the 3-year average 98th percentile 24-hour background concentration measured at monitor 51390006 in Union County, Arkansas 28.67 μg/m^3. The total 33.41 μg/m^3 was below the 24-hour $PM_{2.5}$ NAAQS of 35.0 μg/m^3. Based on this result, operation of the Perryville Compressor Station will not prevent attainment of the $PM_{2.5}$ NAAQS.

As described in Section 3.11.1.2, the compressor stations would be operated in compliance with federal and state air quality regulations driven by the CAA. As stated previously, the proposed Project would not be subject to PSD permitting requirements because the net emissions from each proposed compressor station would not meet the PSD applicability thresholds. However, the Lamar and Perryville Compressor Stations would be required to obtain Title V operating permits.

The compressor stations would include an emergency shut down (ESD) system blowdown, pursuant to DOT safety requirements (see Section 3.12). In the event of an emergency, activation of the ESD system would vent the piping (expel the natural gas) to the atmosphere. The ESD system would be used in the event of an emergency and for occasional planned maintenance activities that require blowdown. Natural gas blowdowns are not part of routine operation and are considered an insignificant emission source due to the minimal amount of VOC contained in the vented natural gas.

Operation of the proposed pipeline and ancillary facilities would not result in substantial air emissions under normal operating conditions. Typically, only minor fugitive emissions of natural gas would occur from small connections at meter station and valve sites. Because such emissions are very small and discountable, they are not regulated by permit or source-specific requirements. Similarly, use of the access roads along the proposed pipeline for maintenance would generate occasional, minor, short-term increases in fugitive dust. Such emissions would be similar to that generated by general traffic on other unpaved roads in the area and would have a negligible effect on air quality.

3.11.2 Noise Quality

Noise quality can be affected both during construction and operation of pipeline projects. The ambient sound level of a region is defined by the total noise generated, including sounds from both natural and artificial sources. The magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week, in part due to changing weather conditions and the effects of seasonal vegetative cover. Two measurements used by some federal agencies to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level ($L_{eq(24)}$) and the day-night sound level (L_{dn}). The $L_{eq(24)}$ is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The L_{dn} is the $L_{eq(24)}$ with 10 decibels on the A-weighted scale (dBA) added to nighttime sound levels between the hours of 10 p.m. and 7 a.m. to account for people's greater sensitivity to sound during nighttime hours.

In 1974, EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. This document provides information for state and local governments to use in developing their ambient noise standards. The EPA determined that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. The FERC has adopted this criterion and generally uses it to evaluate the impact of the compressor facilities on noise quality. Specifically, we require that noise attributable to compressor stations shall not exceed the 55 dBA L_{dn} level to limit impacts at any noise sensitive area (NSA), such as a residence, school, or hospital, unless the NSA is developed after the compressor station is constructed.

Oklahoma, Texas, Louisiana, Mississippi, and Alabama do not regulate noise at the state level. The Bossier Parish, Louisiana, Police Jury Rules (46.31[b][7]) require mufflers on construction equipment. None of the other counties or parishes that would be traversed by the proposed Project have existing regulations or ordinances governing noise from construction or industrial activities, though some do maintain general prohibitions on nuisance noise.

3.11.2.1 Existing Noise Levels

The Lamar Compressor Station (MP TX 28.7) would be located in a rural portion of Lamar County, Texas, near Broadway Junction south of Paris. The land surrounding the site is relatively flat, with minor stream valleys to the east and west. Land use in the area surrounding the proposed compressor station site consists primarily of open land (row crop and pasture land) interspersed with patches of forested land and widely scattered residences, and the site is bordered by the Texas Highway 19/24 transportation corridor to the east. The nearest NSAs (NSA #8 and 9) are residences located about 1,700 feet south-southwest and 2,000 feet west-southwest of the proposed compressor station site. The locations of other residences in proximity to the proposed compressor station site are described in Table 3.11.2-1.

TABLE 3.11.2-1
Existing Noise Levels at Noise Sensitive Areas Near the Proposed Midcontinent Express Pipeline Project Compressor Stations

Noise Sensitive Area (NSA)	Distance/Direction to NSA from Compressor Station Site (feet)	Measured L_d (dBA)	Measured L_n (dBA)	Calculated L_{dn} (dBA)
Lamar Compressor Station				
NSA #1	2,200 – Southwest	46	58	63.8
NSA #2	5,700 – North	57	45	56.4
NSA #3	2,900 – North-northeast	54	45[a]	54.4
NSA #4	5,600 – East	41	41[a]	47.4
NSA #5	4,600 –South-southeast	65	51	63.9
NSA #6	5,000 – East-northeast	49	49	55.4
NSA#7	2,700 – South-southwest	46[b]	58[b]	63.8
NSA#8	1,700 – South-southwest	46[b]	58[b]	63.8
NSA#9	2,000 – West-southwest	46[b]	58[b]	63.8
Atlanta Compressor Station				
NSA #1	800 – Southeast	54	53	59.6
NSA #2	2,300 – South-southeast	51	53	59.2
NSA #3	1,700 – West-northwest	70	51	68.3
NSA #4	4,600 – Northeast	34	49	54.8
NSA #5	7,200 – East	43	46	52.1
Perryville Compressor Station				
NSA #1	3,000 – East-southeast	53	53	59.4
NSA #2	5,500 –Southeast	50	58	63.9
NSA #3	10,000 – West-northwest	54	51	58.0
NSA #4	9,000 – Northwest	51	58	63.9
Vicksburg Compressor Station				
NSA #1	2,400 – West	55	45	55.0
NSA #2	4,200 – Southwest	50	56	61.9
NSA #3	4,800 – North-northwest	54	46	54.9
Delhi Booster Station[b]				
NSA #1	600 – South-southwest	46	45	51.6
NSA #2	1,100 – Southwest	68	58	68.0
NSA #3	1,100 – West	68	58	68.0
NSA #4	2,200 – Northwest	61	56	63.6
NSA #5	1,100 – North-northeast	44	46	52.2
NSA #6	800 – East-southeast	44	46	52.2

TABLE 3.11.2-1 (continued)
Existing Noise Levels at Noise Sensitive Areas Near the Proposed Midcontinent Express Pipeline Project Compressor Stations

Notes:
L_d = daytime sound levels.
L_n = nighttime sound levels.
L_{dn} = day-night equivalent sound level.
dBA = decibels on the A-weighted scale.
[a] Ambient sound levels at these locations were estimated based on the corresponding day or nighttime, measured noise level.
[b] Ambient sound levels at NSAs assumed to be the same as those measured at NSA1.

The Atlanta Compressor Station (MP TX 117.4) would be located in a rural portion of Cass County, Texas, south of Atlanta. The land surrounding the proposed site is primarily forested, with widely scattered residences in an area of varying topography. The proposed site is bordered to the east by County Road 423. The nearest NSA (NSA #1) is a residence located approximately 800 feet east-southeast of the proposed compressor station site, but no other NSAs are located within 0.3 mile of the proposed site (Table 3.11.2-1).

The Perryville Compressor Station (MP LA 109.0) would be located in a rural part of Union Parish, Louisiana, west of the town of Spencer near the junction of Mashaw Drive and West Port Union Road. Lands surrounding the site consist primarily of forest and cut-over forest lands with widely scattered residences in an area of varying topography. The nearest NSA (NSA #1) is a residence located 3,000 feet east-southeast of the proposed compressor station site, but no other NSAs are located within 1 mile of the proposed site (Table 3.11.2-1).

The Vicksburg Compressor Station (MP MS 11.8) would be located in a rural part of Warren County, Mississippi, southeast of Vicksburg. Land use at the proposed site consists of an open agricultural field bordered by forested land to the south and Bovina Cut Off Road to the west. Residences in the surrounding area are widely scattered, and the nearest NSA (NSA #1) is a residence located 2,400 feet west of the proposed compressor station site. No other NSAs are located within 0.8 mile of the proposed site (Table 3.11.2-1).

The Delhi Booster Station (MP LA 160.2) would be located in a rural part of Richland Parish, Louisiana, south of the town of Delhi. The land surrounding the station is generally flat and is bordered by the Macon Bayou river corridor to the east and Louisiana State Highway 17 to the west. Land use in the area consists of open land (row crop and pasture land) interspersed with patches of forested land. An existing compressor station operated by Columbia Gulf is located approximately 1,500 feet to the south across an open field. Several residences are located in the vicinity of the proposed compressor station site, with the nearest NSA (NSA #1) located approximately 600 feet south-southwest of the proposed site (Table 3.11.2-1).

MEP conducted ambient sound-level surveys to document representative background noise levels at NSAs near the proposed compressor station sites. Background noise levels were measured for 15-minute intervals during daytime and nighttime (10 p.m. to 7 a.m.) hours. Audible noise sources at all sites were consistent with a rural setting and included traffic on local roads, insects, birds, livestock, and wind. Noise from trains and aircraft were also recorded at the proposed Atlanta Compressor Station site. The measured daytime and nighttime noise levels, as well as the calculated L_{dn} for each NSA are summarized in Table 3.11.2-1.

Two commentors have expressed concerns that the noise survey conducted by MEP may not accurately represent ambient conditions at NSAs located near the Lamar Compressor Station. In fact, the commentors filed their own noise survey conducted by an environmental consulting firm, which they contend disputes the results of the MEP noise survey. Our review of the two surveys indicates that differing field methods were used and that the studies' results were not interpreted or presented in a consistent manner. Given the apparent survey discrepancies and the need to further document baseline noise conditions prior to operations at the Lamar Compressor station, MEP committed in a filing dated May 14, 2008 to conduct a pre-construction 24-hour ambient noise survey at the Ditzler Jones and Ray Martin properties located near the proposed Lamar Compressor Station and file the results of that survey for the FERC staff's review.

3.11.2.2 General Impacts and Mitigation

Construction Noise

Construction of the proposed Project would be typical of other pipeline projects in terms of schedule, equipment used, and types of activities. Construction would increase sound levels in the vicinity of Project activities, and the sound levels would vary during the construction period, depending on the construction phase.

Pipeline construction generally would proceed at rates ranging from several hundred feet to 1 mile per day. However, due to the assembly-line method of construction, activities in any one area would last from several weeks to several months on an intermittent basis. Although construction of aboveground facilities would not share the transient nature of the pipeline construction spreads, these activities would be short term and limited to daylight hours. Construction equipment would be operated on an as-needed basis during those periods and would be maintained to manufacturers' specifications to minimize noise impacts. Although individuals in the immediate vicinity of the construction activities would experience annoyance, the impact on the noise environment at any specific location along the proposed pipeline route would be short term. Similarly, noise associated with construction of the proposed aboveground facilities would be intermittent during the construction period, but the overall impact would be temporary and would not be expected to be significant. Further, nighttime noise levels would normally be unaffected since most construction activities would be limited to daylight hours. The possible exceptions would be at the proposed HDD entry sites, where drilling and related construction equipment would likely operate on a continuous, 24-hour-per-day basis over short periods, ranging from two to several weeks.

HDD activities have the potential to exceed the FERC benchmark of 55 dBA L_{dn}. Table 3.11.2-2 shows the specific HDD sites where estimates of HDD noise would exceed 55 dBA L_{dn} at the nearest NSA. MEP has indicated that it would conduct sound surveys for all NSAs where drilling equipment would operate on a 24-hour-per-day basis. If those surveys showed that noise levels exceeded 55 dBA, MEP would either stop drilling and implement mitigation (e.g., temporary noise barriers) to reduce the noise levels to less than 55 dBA at all NSAs or offer to provide the occupants of the affected NSAs with temporary housing at a commercial hotel for the duration of HDD activities. To ensure that NSAs are not exposed to excessive noise during nighttime drilling operations, **we recommend that:**

- **Prior to construction, MEP should file with the Secretary, for review and written approval by the Director of OEP, a Noise Analysis and Mitigation Plan for the entry and exit locations for the HDD sites listed in Table 3.11.2-2 of the Final EIS where drilling would occur 24 hours per day. The plan should include:**

    a. the estimated number of days of drilling required for each location;

b. a list indicating the direction and distance of the NSAs within 0.5 mile;

c. a topographic map showing the location of the NSAs within 0.5 mile;

d. the existing day-night average noise (L_{dn}) at the NSAs nearest to each drill location and the predicted noise impacts at the NSAs during drilling activities; and

e. a description of any noise mitigation that would be implemented prior to the start of drilling activities to reduce noise impacts, or alternate measures proposed by MEP, such as temporary relocation or compensation.

TABLE 3.11.2-2
Locations with Predicted HDD Operation Noise Impacts Greater Than 55 dBA

HDD Site	HDD Location	Calculated L_{dn} due to HDD Activity (dBA)
#5	Wetland/Brushy Creek, TX 46.3	64.3
#9	Unnamed ponds, TX 114.4	57.8
#15	Bayou D'Loutre, LA 113	66.3
#16	Ouachita River, LA 119.5	58.5
#17	Highway 165, LA 121.9	69.8
#18	Bayou de Siard, LA 123.1	73.3
#19	Little Bayou Boeuf	59.5
#20	Bayou Lafourche, LA 140.9	60.4
#21	Boeuf River, LA 143.8	67.9
#22	Macon Bayou, LA 158.5	66.3
#23	Joe's Bayou, LA 162.9	78.4
#24	WRP Crossing, LA 165.2	67.6
#25	Tensas River, LA 166	65.6
#27	Highway 61, MS 2.0	72.0
#28	Big Black River, MS 12.5	63.6
#29	Turkey Creek, MS 25.7	63.6
#30	I-55, MS 42.1	62.3
#31	Pearl River, MS 44.6	54.8
#35	Highway 80 and Railroad, CPL 0.4	60.3
#38	Macon Bayou, CPL 3.5	68.8

NOTES:
HDD = Horizontal directional drilling

Operational Noise

Operation of the proposed pipeline facilities would not adversely affect noise quality since the pipeline would be installed underground and would not be a significant source of noise. Potential noise-related impacts during operation of the proposed Project would primarily be limited to the vicinity of the

new compressor stations. Principal noise sources would include the air inlet and exhaust of the engines. Secondary noise sources would include cooling fans, yard piping, and valves.

As discussed above, MEP would also install ESDs (blowdowns) at each of the proposed compressor stations to evacuate natural gas from the facility in the event of an emergency or for maintenance. Emergency blowdowns are typically triggered during an emergency station shutdown, which is a very rare event. Maintenance, or "unit" blowdowns, occur when gas from the compressors and piping must be evacuated. Maintenance blowdowns would be minimized by planning and combining maintenance activities to the extent possible. Emergency blowdowns are typically much longer and louder than unit blowdowns. Typical levels of noise from both types of unsilenced blowdown events would be upwards of 100 dBA L_{eq} at a distance of 50 feet, but these events would not be continuous or frequent. To mitigate any noise effects associated with infrequent and short-term blowdown events, the blowdown vent at each compressor station would be fitted with a silencer. The silencer mitigated noise impact is expected to be 52 dBA at a distance 98 feet from the blowdown stack.

The compressor stations would include design measures to minimize sound generation, such as enclosing the natural gas-fired engines and compressor units in acoustically designed buildings insulated with sound-absorbing fiberglass panels, installing acoustical louvers on the building ventilation system vents, and equipping the compressor engines with exhaust stack and air inlet silencers. As proposed, each compressor building would be designed and constructed to provide from 30 to 40 dBA of transmission loss.

MEP conducted noise impact analyses to predict the noise levels that would result from operation of the proposed compressor stations at the NSAs nearest the proposed facility sites. Expected operational noise levels were determined through computer modeling of the various noise sources within each facility and accounted for the various noise-minimization design measures that would be installed, as described above. The results of the compressor station noise impact analyses are summarized in Table 3.11.2-3.

As can be seen in Table 3.11.2-3, the noise attributable to operation of the proposed compressor station facilities (Estimated Project L_{dn}) would not exceed 55 dBA L_{dn} at any nearby NSA. In some instances, the combination of existing ambient sound levels and the noise attributable to operation of the proposed compressor station would result in a total predicted sound level greater than 55 dBA L_{dn}, but in the majority of these instances the existing ambient sound levels already exceed 55 dBA L_{dn}. For example, the noise attributable to operation of the Lamar Compressor Station at NSA #1, located about 2,200 feet southwest of the proposed compressor station site, would be 51.8 dBA $L_{dn.}$ When combined with existing ambient noise levels, the total predicted sound level perceived at NSA #1 would be about 64.1 dBA L_{dn}. However, the existing ambient noise level at NSA #1, 63.8 dBA L_{dn}, already exceeds 55 dBA. Though operation of the Lamar Compressor Station would cause a predicted noise increase at NSA #1, the increase attributable to operation of the proposed compressor station would be 0.3 dBA. In general, noise differences of 3 dBA or less are considered imperceptible by people.

The maximum predicted noise level increase at nearby NSAs attributable to operation of the Lamar, Atlanta, Perryville, and Vicksburg Compressor Stations would be 1.6, 1.1, 0.5, and 1.2 dBA, respectively (see Table 3.11.2-3). As a result, no significant impact on the noise environment is anticipated from typical operations at those compressor stations. Operation of the Delhi Booster Station would result in a maximum predicted noise level increase of 4.2 dBA at the NSA nearest that facility (NSA #1, located about 600 feet south-southwest of the proposed compressor station site; see Table 3.11.2-3). A noise change of 4.2 dBA can be perceived by a person who actively listens for the change, but the FERC considers a noise change of 9 dBA or less to be less than significant. As a result, no significant impact on the noise environment is anticipated from typical operations at the Delhi Booster Station.

TABLE 3.11.2-3
Predicted Compressor Station Noise Impacts for the Proposed Midcontinent Express Pipeline Project

Noise Sensitive Area (NSA)	Distance/Direction to NSA from Compressor Station Site (feet)	Existing Ambient L_{dn} (dBA)	Estimated Project L_{dn} (dBA)[a]	Total Estimated L_{dn} (dBA)[b]	Predicted Noise Increase (dBA)[c]
Lamar Compressor Station					
NSA #1	2,200 – Southwest	63.8	51.8	64.1	0.3
NSA #2	5,700 – North	56.4	42.5	56.6	0.2
NSA #3	2,900 – North-northeast	54.4	48.5	55.4	1.0
NSA #4	5,600 – East	47.4	43.8	49.0	1.6
NSA #5	4,600 –South-southeast	63.9	44.4	63.9	0.0
NSA #6	5,000 – East-northeast	55.4	45.1	55.8	0.4
NSA#7	2,700 – South-southwest	63.8	49.5	64.0	0.2
NSA#8	1,700 – South-southwest	63.8	54.0	64.2	0.4
NSA#9	2,000 – West-southwest	63.8	52.9	64.1	0.3
Atlanta Compressor Station					
NSA #1	800 – Southeast	59.6	54.1	60.7	1.1
NSA #2	2,300 – South-southeast	59.2	47.9	59.5	0.3
NSA #3	1,700 – West-northwest	68.3	51.2	68.4	0.1
NSA #4	4,600 – Northeast	54.8	41.3	55.0	0.2
NSA #5	7,200 – East	52.1	36.8	52.2	0.1
Perryville Compressor Station					
NSA #1	3,000 – East-southeast	59.4	50.0	59.9	0.5
NSA #2	5,500 – Southeast	63.9	44.1	63.9	0.0
NSA #3	10,000 – West-northwest	58.0	38.3	58.0	0.0
NSA #4	9,000 – Northwest	63.9	39.7	63.9	0.0
Vicksburg Compressor Station					
NSA #1	2,400 – West	55.0	49.9	56.2	1.2
NSA #2	4,200 – Southwest	61.9	45.0	62.0	0.1
NSA #3	4,800 – North-northwest	54.9	44.5	55.3	0.4
Delhi Booster Station					
NSA #1	600 – South-southwest	51.6	53.8	55.8	4.2
NSA #2	1,100 – Southwest	68.0	49.5	68.1	0.1
NSA #3	1,100 – West	68.0	49.3	68.1	0.1
NSA #4	2,200 – Northwest	63.6	43.8	63.6	0.0
NSA #5	1,100 – North-northeast	52.2	50.5	54.4	2.2
NSA #6	800 – East-southeast	52.2	51.3	54.8	2.6

Notes:
L_{dn} = day-night equivalent sound level.
dBA = decibels on the A-weighted scale.
[a] Estimated L_{dn} sound levels are based on operation of all compressor units at each compressor station with noise control measures installed as proposed.
[b] Estimated total $L_{dn} = 10 \log (10^{(\text{Ambient } L_{dn}/10)} + 10^{(\text{Predicted } L_{dn}/10)})$.
[c] Estimated increase in the ambient L_{dn} sound levels due to operation of each compressor station.

As described in Sections 2.4 and 3.11.1, construction of the proposed compressor stations would be completed in phases, as proposed. Our analysis of operational noise effects assumed operation of the total planned compression capacity at all proposed stations and predicted that no significant noise-related effects would occur to the NSAs nearest the compressor stations. However, given the phased construction schedule proposed by MEP, it is possible that NSAs would be constructed nearer to the proposed Atlanta and Vicksburg Compressor Stations prior to their construction. If NSAs were constructed closer to the compressor station sites, the predicted noise-related effects evaluated in this EIS would be invalidated. In addition, we believe that the actual noise levels resulting from operation of the proposed compressor stations should be measured to ensure that they do not exceed the levels analyzed in this EIS. Therefore, **we recommend that:**

- **MEP should conduct noise surveys to verify that the noise attributable to operation of each of the compressor stations does not exceed an L_{dn} of 55 dBA at any NSA following the installation of all authorized compressor units at each station and file the results of those surveys with the Secretary no later than 60 days after placing all authorized compressor units in service or prior to the start of the next phase of construction, whichever is sooner. If the noise attributable to operation of any of the compressor stations exceeds 55 dBA L_{dn} at any NSA, MEP should file a report on what additional noise controls are needed to meet that level and install any required controls within one year of the in-service date of the associated compressor unit(s) or prior to the start of the next phase of construction, whichever is sooner. MEP should confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls or prior to the start of the next phase of construction, whichever is sooner.**

MEP will construct 12 pipeline interconnect sites which will be equipped with pressure reducing valves. Eight of the interconnect sites will also be equipped with pipeline heaters. Pressure reducing valves and the combustion air blowers on heaters are noise sources. Unmitigated noise generated from the interconnect sites will range from 35 to 55 dBA L_{dn} at the nearest NSAs.

If MEP provides assurance that any noise impacts have been mitigated, as required by the above recommendations, we believe that Project-related operations would not result in a significant effect on the noise environment.

3.12 RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

Methane has an ignition temperature of 1,000 ^{o}F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

3.12.1 Safety Standards

The DOT is mandated to provide pipeline safety under Title 49, USC Chapter 601. The Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level. Section 5(a) of the Natural Gas Pipeline Safety Act (NGPSA) provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards, while Section 5(b) permits a state agency that does not qualify under Section 5(a) to perform certain inspection and monitoring functions. A state may also act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement action. The majority of the states have either 5(a) certifications or 5(b) agreements, while nine states act as interstate agents.

The DOT pipeline standards are published in Parts 190 to 199 of Title 49 of the CFR. Part 192 of 49 CFR specifically addresses natural gas pipeline safety issues.

Under a Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993 between DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an Applicant certify that it will design, install, inspect, test, construct, operate, replace, and maintain the facility for which a certificate is requested in accordance with federal safety standards and plans for maintenance and inspection, or shall certify that it has been granted a waiver of the requirements of the safety standards by DOT in accordance with Section 3(e) of the NGPSA. The FERC accepts this certification and does not impose additional safety standards other than the DOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert DOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipeline under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee, which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the Midcontinent Express Pipeline Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR Part 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Part 192 also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined as follows:

Class 1 Location with 10 or fewer buildings intended for human occupancy.

Class 2	Location with more than 10 but less than 46 buildings intended for human occupancy.
Class 3	Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.
Class 4	Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. Pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock. All pipelines installed in navigable rivers, streams, and harbors must have a minimum cover of 48 inches in soil or 24 inches in consolidated rock. MEP has proposed to install the proposed pipeline at a minimum depth of 36 inches (measured from the top of the pipeline) below the ground surface.

Class locations also specify the maximum distance to a sectionalizing block valve (e.g., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, MAOP, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Preliminary class locations for the proposed Project have been developed based on the relationship of the proposed pipeline centerline to other nearby structures and manmade features. MEP has reported that the majority of the Project mainline pipeline, approximately 466.6 miles, would be designated as Class 1. Of the remaining mainline pipeline length, approximately 31.0 and 4.4 miles would be classified as Classes 2 and 3, respectively. MEP reports that the entire CenterPoint Lateral route would be within areas designated as Class 1.

If a subsequent increase in population density adjacent to the right-of-way indicates a change in class location for the pipeline, MEP would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the DOT code of regulations for the new class location.

In 2002, Congress passed an act to strengthen the Nation's pipeline safety laws. The Pipeline Safety Improvement Act of 2002 (HR 3609) was passed by Congress on November 15, 2002, and signed into law by the President in December 2002. No later than December 17, 2004, gas transmission operators must develop and follow a written integrity management program that contains all the elements described in §192.911 and addresses the risks on each covered transmission pipeline segment. Specifically, the law establishes an integrity management program, which applies to all high consequence areas (HCAs). The DOT (68 FR 69778, 69 FR 18228, and 69 FR 29903) defines HCAs as they relate to the different class zones, potential impact circles, or areas containing an identified site as defined in §192.903 of the DOT regulations.

OPS published a series of rules from August 6, 2002, to May 26, 2004 (69 FR 29903), that defines HCAs where a gas pipeline accident would do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate in 49 USC 60109 for OPS to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method, an HCA includes:

- current Class 3 and 4 locations;
- any area in Class 1 or 2 where the potential impact radius[2] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[3]; or
- any area in Class 1 or 2 where the potential impact circle includes an identified site[4].

In the second method, an HCA includes any area within a potential impact circle that contains:

- 20 or more buildings intended for human occupancy; or
- an identified site.

Once a pipeline operator has determined the HCAs on its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan at § 192.911. The HCAs have been determined based on the relationship of the pipeline centerline to other nearby structures and identified sites. Of the 506.1 miles of proposed Project mainline route, MEP has identified approximately 17.4 miles that would be classified as an HCA. None of the proposed CenterPoint Lateral route would be classified as an HCA. Table 3.12.1-1 lists the identified HCAs that would be crossed by the proposed Project. The pipeline integrity management rule for HCAs requires inspection of the entire pipeline for HCAs every 7 years.

Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency shutdown of system and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

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[2] The potential impact radius is calculated as the product of 0.69 and the square root of the MAOP of the pipeline in psi multiplied by the pipeline diameter in inches.

[3] The potential impact circle is a circle of radius equal to the potential impact radius.

[4] An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate. Examples of these facilities include, but are not limited to, hospitals, prisons, schools, day-care facilities, retirement facilities or assisted-living facilities. Identified sites do not typically include private residences.

TABLE 3.12.1-1 High Consequence Areas Crossed by the Proposed Midcontinent Express Pipeline Project			
	Milepost		
Facility	Begin	End	Length (miles) [a]
Mainline Pipeline			
	TX 15.4	TX 16.0	0.7
	TX 94.1	TX 94.8	0.7
	LA 45.7	LA 46.6	0.9
	LA 58.8	LA 60.1	1.7
	LA 62.7	LA 63.6	1.0
	LA 78.9	LA 79.8	0.9
	LA 81.9	LA 82.6	0.7
	LA 85.1	LA 86.3	1.2
	LA 99.1	LA 99.9	0.9
	LA 121.6	LA 123.8	2.1
	LA 129.2	LA 130.2	0.9
	LA 157.6	LA 158.5	0.9
	LA 158.5	LA 158.8	0.3
	LA 191.5	LA 192.3	0.7
	MS 0.2	MS 0.6	0.5
	MS 16.7	MS 17.5	0.8
	MS 51.7	MS 52.3	0.6
	MS 90.2	MS 90.7	0.5
	MS 98.1	MS 98.6	0.5

Notes:
[a] Due to rounding, subtraction of the reported milepost begin and end values may not equal the reported pipeline lengths.

During the Draft EIS comment period, we received some comments regarding the training of local emergency personnel. Part 192 requires that each operator must establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. MEP has committed to providing the appropriate training to local emergency service personnel before the pipeline and compressor stations are placed in service. No specialized local fire protection equipment would be required to handle pipeline emergencies.

3.12.2 Pipeline Accident Data

Since February 9, 1970, 49 CFR Part 191 has required all operators of transmission and gathering systems to notify the DOT of any reportable incident and to submit a report on form F7100.2 within 20 days. Reportable incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization;
- required taking any segment of transmission line out of service;
- resulted in gas ignition;
- caused estimated damage to the property of the operator, or others, or both, of a total of $5,000 or more;
- required immediate repair on a transmission line;
- occurred while testing with gas or another medium; or
- in the judgment of the operator was significant, even though it did not meet the above criteria.

The DOT changed reporting requirements after June 1984 to reduce the amount of data collected. Since that date, operators must only report incidents that involve property damage of more than $50,000, injury, death, release of gas, or that are otherwise considered significant by the operator. Table 3.12.2-1 presents a summary of incident data for the 1970 to 1984 period, as well as more recent incident data for 1986 through 2007, recognizing the difference in reporting requirements. The 14.5-year period from 1970 through June 1984, which provides a larger universe of data and more basic report information than subsequent years, has been subject to detailed analysis, as discussed in the following sections.[5]

TABLE 3.12.2-1
Natural Gas Service Incidents by Cause

	Incidents per 1,000 Miles of Pipeline (Percent Distribution)	
Cause	**1970 through 1984**	**1986 through 2007**
Outside forces	0.70 (53.8)	0.09 (36.0)
Corrosion	0.22 (16.9)	0.06 (24.0)
Construction or material defect	0.27 (20.8)	0.04 (16.0)
Other	0.11 (8.5)	0.06 (24.0)
Total	**1.30**	**0.25**

Sources: Jones et al. (1986); DOT, OPS, http://ops.dot.gov/stats/stats.htm.

During the 14.5-year period, 5,862 service incidents were reported over the more than 300,000 total miles of natural gas transmission and gathering systems nationwide. Service incidents, defined as failures that occur during pipeline operation, have remained fairly constant over this period with no clear upward or downward trend in annual totals. In addition, 2,013 test failures were reported. Correction of test failures removed defects from the pipeline before operation (Jones et al. 1986).

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 3.12.2-1 provides a percentage distribution of the causal factors as well as the annual frequency of each factor per 1,000 miles of pipeline in service (Jones et al. 1986). Data presented for the period extending from mid 1986 through 2007 were gathered from the DOT's OPS.

[5] Jones, D. J., G. S. Kramer, D. N. Gideon, and R. J. Eiber, 1986. "An Analysis of Reportable Incidents for Natural Gas Transportation and Gathering Lines 1970 through June 1984." NG-18 Report No. 158, Pipeline Research Committee of the American Gas Association.

The dominant incident cause is outside forces, constituting 53.8 percent of all service incidents. Outside forces incidents result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Table 3.12.2-2 shows that human error in equipment usage was responsible for approximately 75 percent of outside forces incidents. Since April 1982, operators have been required to participate in One Call public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The One Call program is a service used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts. The 1986 through 2007 data show that the portion of incidents caused by outside forces has decreased to 36.0 percent.

TABLE 3.12.2-2
Outside Forces Incidents by Cause
(1970 through 1984)

Cause	Percent
Equipment operated by outside party	67.1
Equipment operated by or for operator	7.3
Earth movement	13.3
Weather	10.8
Other	1.5

Source: Jones et al. (1986).

The pipelines included in the data set in Table 3.12.2-1 vary widely in terms of age, pipe diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of service incidents is strongly dependent on pipeline age. While pipelines installed since 1950 exhibit a fairly constant level of service incident frequency, pipelines installed before that time have a significantly higher rate, partially due to corrosion. Older pipelines have a higher frequency of corrosion incidents, since corrosion is a time-dependent process. Further, new pipe generally uses more advanced coatings and cathodic protection to reduce corrosion potential.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines, which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movements.

Table 3.12.2-3 clearly demonstrates the effectiveness of corrosion control in reducing the incidence of failures caused by external corrosion. The use of both an external protective coating and a cathodic protection system, required on all pipelines installed after July 1971, significantly reduces the rate of failure compared to unprotected or partially protected pipe. The data show that bare, cathodically protected pipe actually has a higher corrosion rate than unprotected pipe. This anomaly reflects the retrofitting of cathodic protection to actively corroding spots on pipes.

TABLE 3.12.2-3 External Corrosion by Level of Control (1970 through June 1984)	
Corrosion Control	**Incidents per 1,000 Miles per Year**
None – bare pipe	0.42
Cathodic protection only	0.97
Coated only	0.40
Coated and cathodic protection	0.11

Source: Jones et al. (1986).

3.12.3 Impact on Public Safety

The service incident data summarized in Table 3.12.2-1 include pipeline failures of all magnitudes with widely varying consequences. Approximately two-thirds of the incidents were classified as leaks, and the remaining third classified as ruptures, implying a more serious failure.

Table 3.12.3-1 presents the average annual fatalities that occurred on natural gas transmission and gathering lines from 1970 to 2007. Fatalities between 1970 and June 1984 have been separated into employees and non-employees, to better identify a fatality rate experienced by the general public. Of the total 5.0 nationwide average, fatalities among the public averaged 2.6 per year over this period. The simplified reporting requirements in effect after June 1984 do not differentiate between employees and non-employees. However, the data show that the total annual average for the period 1984 through 2007 decreased to 3.5 fatalities per year. Subtracting two major offshore incidents in 1989, which do not reflect the risk to the onshore public, yields a total annual rate of 2.8 fatalities per year for this period.

TABLE 3.12.3-1
Annual Average Fatalities
Natural Gas Transmission and Gathering System

Year	Employees	Non-employees	Total
1970 – June 1984	2.4	2.6	5.0
1984 – 2007[a]	-	-	3.5
1984 – 2007[a]	-	-	2.8[b]

Notes:
[a] Employee/non-employee breakdown not available after June 1984.
[b] Without 18 offshore fatalities occurring in 1989 (11 resulting from a fishing vessel striking an offshore pipeline and 7 from an explosion on an offshore production platform).
Sources: Jones et al. (1986); DOT, OPS, http://ops.dot.gov/stats.htm.

The nationwide totals of accidental fatalities from various manmade and natural hazards are listed in Table 3.12.3-2 in order to provide a relative measure of the industry-wide safety of natural gas pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. Nevertheless, the average 2.6 public fatalities per year is relatively small considering the more than 300,000 miles of transmission and gathering lines in service nationwide. Furthermore, the fatality rate is approximately two orders of

magnitude (100 times) lower than the fatalities from natural hazards such as lightning, tornadoes, floods, and earthquakes.

TABLE 3.12.3-2
Nationwide Accidental Deaths

Type of Accident	Fatalities
All accidents	90,523
Motor vehicle	43,649
Falls	14,985
Drowning	3,488
Poisoning	9,510
Fires and burns	3,791
Suffocation by ingested object	3,206
Tornado, flood, earthquake (1984 to 1993 average)	181
All liquid and gas pipelines[a] (1978 to 1987 average)	27
Gas transmission and gathering lines[b] (non-employees only, 1970 to 1984 average)	2.6

Notes:
[a] DOT, "Annual Report on Pipeline Safety – Calendar Year 1987."
[b] Jones et al. (1986).
Source: All data, unless otherwise noted, reflect 1996 statistics from the U.S. Department of Commerce, Bureau of the Census, "Statistical Abstract of the United States, 118th Edition."

The available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation. Based on approximately 301,000 miles in service, the rate of public fatalities for the nationwide mix of transmission and gathering lines in service is 0.01 per year per 1,000 miles of pipeline. Using this rate, the proposed Project might result in a public fatality every 198 years. This would represent a slight increase in risk to the nearby public.

3.12.4 Additional Security and Safety Issues

3.12.4.1 Terrorism

In the aftermath of the terrorist attacks that occurred on September 11, 2001, terrorism has become a very real issue for the facilities under the FERC's jurisdiction. The FERC, like other federal agencies, is faced with a dilemma in how much information can be offered to the public while still providing a significant level of protection to energy facilities. Consequently, the FERC has removed energy facility design plans and location information from its internet Web site to ensure that sensitive information is not readily available (Docket No. RM06-23-000 issued October 30, 2007 and effective as of December 14, 2007).

Since September 11, 2001, the FERC has been involved with other federal agencies in developing a coordinated approach to protecting the energy facilities of the United States, and continues to coordinate with these agencies to address this issue. In addition, interstate natural gas companies are actively involved with several industry groups to chart how best to address security measures in the current environment. A Security Task Force has been created and is addressing ways to improve pipeline

security practices, strengthen communication within the industry and the interface with government, and extend public outreach efforts.

Increased security awareness has occurred throughout the industry and the nation. The Office of Homeland Security was established with the mission of coordinating the efforts of all executive departments and agencies to detect, prepare for, prevent, and protect against, respond to, and recover from terrorist attacks within the United States. The FERC, in cooperation with other federal agencies and industry trade groups, has joined in the efforts to protect the energy infrastructure, including the approximately 300,000 miles of interstate natural gas transmission pipelines. MEP's pipeline system would be inspected by air and on the ground in accordance with DOT surveillance requirements. Security measures at the aboveground facilities would include secure fencing, locked buildings, security lighting, automated alarm systems, and video camera surveillance. Employees would be required to wear identification cards, and approved visitors would need to sign in and wear identification badges.

Safety and security are important considerations in any action undertaken by the FERC. The attacks of September 11, 2001 have changed the way pipeline operators as well as regulators must consider terrorism, both in approving new projects and in operating existing facilities. However, the likelihood of future attacks of terrorism or sabotage occurring along the Project, or at any of the myriad of natural gas pipeline or energy facilities throughout the United States is unpredictable given the disparate motives and abilities of terrorist groups. The continuing need to construct facilities to support the future natural gas pipeline infrastructure is not diminished by the threat of any such future acts. Moreover, the unpredictable possibility of such acts does not support a finding that this particular project should not be constructed. The Commission is confident that with the options available in the detailed design of the proposed Project, including alignment, depth of cover, pipe thickness, and location of isolation valves, the proposed Project would be safely constructed and operated.

3.13 CUMULATIVE IMPACTS

In accordance with NEPA and the FERC policy, we considered the cumulative impacts of the proposed Project and other projects in the general Project area. Cumulative impacts represent the incremental effects of the proposed action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a given period of time. The direct and indirect impacts of the proposed Project are discussed in other sections of this EIS.

The purpose of this cumulative impact analysis is to identify and describe cumulative impacts that would potentially result from implementation of the proposed Project. This cumulative impact analysis generally follows the methodology set forth in relevant guidance (CEQ 1997b, EPA 1999). Under these guidelines, inclusion of other projects within the analysis is based on identifying commonalties of impacts from other projects to potential impacts that would result from the proposed Project. An action must meet the following three criteria to be included in the cumulative impacts analysis:

- impact a resource area potentially affected by the proposed Project;
- cause this impact within all, or part of, the proposed Project area; and
- cause this impact within all, or part of, the time span for the potential impact from the proposed Project.

For the purposes of this cumulative impact analysis, we considered the Project area to be the counties and parishes traversed by the proposed Project.

The actions considered in the cumulative impact analysis may vary from the proposed Project in nature, magnitude, and duration. These actions are included based on the likelihood of completion, and only projects with either ongoing impacts or that are "reasonably foreseeable" future actions were evaluated. Existing or reasonably foreseeable actions that would be expected to affect similar resources during similar time periods as the proposed Project were considered further. The anticipated cumulative impacts of the proposed Project and these other actions are discussed below, as well as any pertinent mitigation actions. The anticipated cumulative impacts were based on NEPA documentation, agency and public input, and best professional judgment.

We identified three types of past, present, and reasonably foreseeable future projects that would potentially result in a cumulative impact when considered with the proposed Project. These are (1) other natural gas pipeline projects; (2) facilities that would be associated with construction of the proposed Project but that are not under the FERC's jurisdiction; and (3) unrelated projects that are either in place, are under construction in the vicinity of the proposed Project, or are proposed (Table 3.13-1).

TABLE 3.13-1
Existing or Proposed Projects That Could Cumulatively Impact Environmental Resources in the Proposed Midcontinent Express Pipeline Project Area

Project	Description	Actual/Anticipated Construction Date	Counties/Parishes within Project Area
Natural Gas Pipeline Projects			
Gulf Crossing Pipeline	Construct and operate a 366-mile-long, 42-inch-diameter natural gas pipeline	2008	Bryan, Oklahoma Grayson, Fannin, Lamar, Franklin, Titus, Morris, and Cass, Texas Caddo, Bossier, Webster, Claiborne, Lincoln, Union, Ouachita, Morehouse, Richland, and Madison, Louisiana Hinds and Simpson, Mississippi
Southeast Supply Header	Construct and operate a 269-mile-long, 36-inch and 42-inch-diameter natural gas pipeline	2008	Richland and Madison, Louisiana Simpson, Warren and Hinds, Mississippi
Southeast Expansion	Construct and operate a 111-mile-long, 42-inch-diameter natural gas pipeline	2007–2008	Richland, Louisiana Hinds, Jasper, Clarke, Simpson, and Smith, Mississippi, Choctaw, Alabama
East Texas to Mississippi Expansion	Construct and operate a 240-mile-long, 42-inch-diameter; and a 3-mile-long, 36-inch-diameter natural gas pipeline	2007-2008	Ouachita, Richland, and Madison, Louisiana Hinds, Simpson, and Warren, Mississippi
Carthage to Perryville	Construct and operate a 172-mile-long, 42-inch-diameter natural gas pipeline	2006–2007	Caddo, Ouachita, and Richland, Louisiana

TABLE 3.13-1 (continued)
Existing or Proposed Projects That Would Cumulatively Impact Environmental Resources in the Proposed Midcontinent Express Pipeline Project Area

Project	Description	Actual/Anticipated Construction Date	Counties/Parishes within Project Area
Nonjurisdictional Facilities			
Enogex Pipeline Lateral	Construct and operate a natural gas pipeline (43-mile right-of-way) with a compressor station in the proposed Midcontinent Express Pipeline Project vicinity	2008–2009	Bryan, Oklahoma
Unrelated Projects			
Trans-Texas Corridor 69	Construct and operate an intermodal transportation corridor from Texarkana, Texas, to Mexico	N/A	Cass, Texas
Interstate 69 (SIU 14)	Construct and operate a highway between U.S. Highway 171 and Interstate Highway 20 as part of the Interstate 69 corridor that will link Indianapolis, Indiana to the lower Rio Grande Valley in Texas	N/A	Bossier, Webster, and Claiborne, Louisiana
Unrelated Projects			
U.S. Highway 171	Widen to four lanes sections of U.S. Highway 171 from Shreveport to Lake Charles, Louisiana	2007–2010; work in proposed Project area completed	Caddo, Louisiana
U.S. Highway 167	Widen to four lanes sections of U.S. Highway 167 from Alexandria, Louisiana to the Arkansas state line	2007–2010	Lincoln, Union, and Clairborne, Louisiana
U.S. Highway 165	Widen to four lanes sections of U.S. Highway 165 from Jennings, Louisiana to the Arkansas state line	2007–2010; work in proposed Project area completed	Ouachita and Morehouse, Louisiana
Clinton/Raymond Road Interchange	Interchange reconstruction, new bridge on Interstate 20, new loop in the southwest quadrant, and widen U.S. Highway 80 to five lanes between Raymond Road to Springridge Road	October 2007	Hinds, Mississippi
Stack Project (Interstate 20/ U.S. Highway 49)	Reconstruction of interchange, including additional lanes to both U.S. Highway 49 south and frontage roads	Early 2008	Hinds, Mississippi
Denbury Resources, Inc. Pipeline Project	Proposed construction of a new carbon dioxide pipeline.	2008	Madison and Richland Parishes, LA

TABLE 3.13-1 (continued) Existing or Proposed Projects That Would Cumulatively Impact Environmental Resources in the Proposed Midcontinent Express Pipeline Project Area			
Project	**Description**	**Actual/Anticipated Construction Date**	**Counties/Parishes within Project Area**
Marvin Nichols Reservoir I and Dam	Construction of an approximately 72,000-acre reservoir and dam in northeast Texas	N/A	Franklin, Titus, and Morris, Texas
George Parkhouse II Reservoir	Construction of an approximately 14,387-acre reservoir in northeast Texas	N/A	Lamar and Delta, Texas

Note:

N/A = Not available.

In addition to the proposed Midcontinent Express Pipeline Project, the identified natural gas pipeline projects included in our analysis include two recently constructed projects, two projects that are currently under construction, and one recently FERC-certificated project. Additionally, we identified one nonjurisdictional compressor station and pipeline lateral that would deliver natural gas to the proposed Project, seven transportation improvement projects, one carbon dioxide pipeline project, and one water resource project. These projects were identified through comments, scoping, and independent research, as well as information provided by MEP. While we did not specifically contact each county/parish, community, or other entity regarding new projects or plans for expansion, we did request information on other projects in the NOI and Supplemental NOI. We have identified the tentative construction schedules of these projects, as available; but the actual construction schedules would depend on factors such as economic conditions, the availability of funds, and political considerations.

The potential impacts associated with these projects that are most likely to be cumulatively significant are related to wetlands and waterbodies, vegetation and wildlife (including federally and state-listed endangered and threatened species), land use, air quality, and noise.

3.13.1 Other Natural Gas Pipeline Projects

Several commentors requested that the EIS evaluate the cumulative effects of other natural gas pipelines recently proposed or constructed in the same general area as the proposed Project. The FERC recently issued Certificates for several interstate natural gas pipeline projects in the Project area, including the Carthage to Perryville, East Texas to Mississippi Expansion, Southeast Expansion, Southeast Supply Header, and Gulf Crossing Projects. Construction of the Carthage to Perryville and East Texas to Mississippi Expansion Projects has been completed, and construction of the, Southeast Expansion and Southeast Supply Header Projects is currently ongoing. The FERC is also recently certificated a proposal for one other natural gas pipeline project, the Gulf Crossing Project, which would also traverse the proposed Project area. Each of these projects is discussed further below.

The FERC (1989) has concluded that the general impact of building more than one pipeline would be primarily additive, and the cumulative impact of multiple projects may be calculated by adding together the impact of each individual project. The FERC-jurisdictional natural gas pipeline projects occurring in the counties and parishes traversed by the proposed Midcontinent Express Pipeline Project

are depicted in Figure 3.13-1, and the environmental resources that would be affected by these projects are quantified in Table 3.13.1-1.

3.13.1.1 Gulf Crossing Project

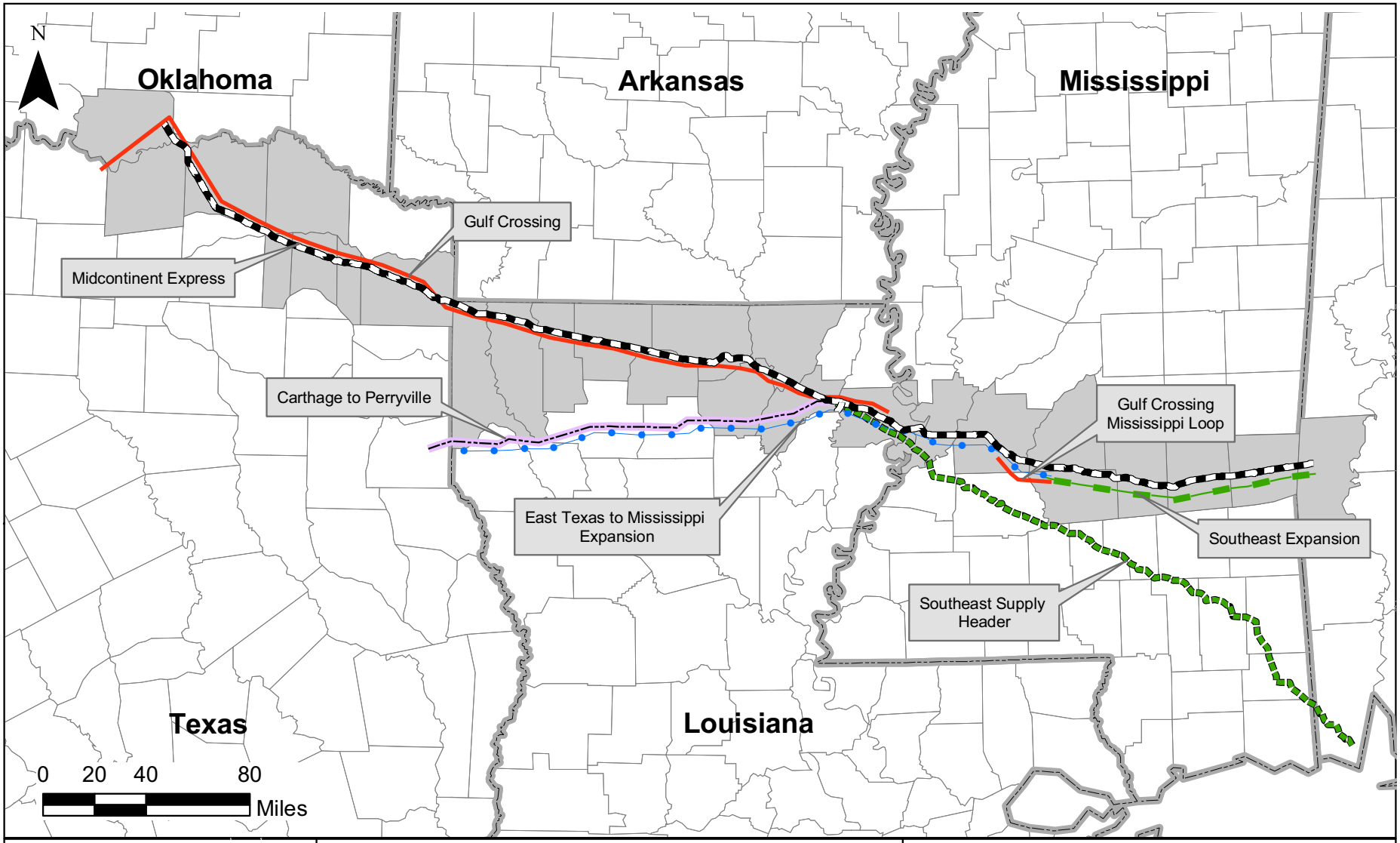
Boardwalk Pipeline Partners, LP (Boardwalk) has proposed construction of a new 42-inch-diameter natural gas pipeline system that would extend approximately 369 miles from Grayson County, Texas, to Madison Parish, Louisiana. The Gulf Crossing Project would also include 4.5 miles of 42-inch-diameter pipeline looping in Madison Parish, Louisiana, and 11.2 miles of 42-inch-diameter pipeline looping in Hinds, Copiah, and Simpson Counties, Mississippi. As proposed, the Gulf Crossing Project would be located near, or collocated with, the proposed Midcontinent Express Pipeline Project for approximately 325 miles of its length between Bryan County, Oklahoma, and Madison Parish, Louisiana. In addition, the proposed Gulf Crossing Project would include construction and operation of four new compressor stations with a combined capacity of 94,136 hp.

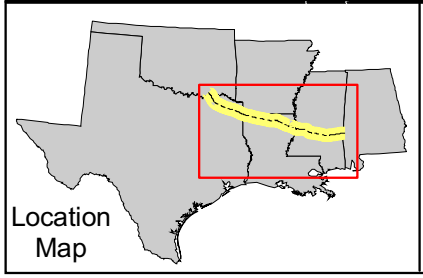
The Gulf Crossing Project is considered here with respect to the potential for cumulative impacts to the natural and human environments of Oklahoma, Texas, Louisiana, and Mississippi. The Gulf Crossing Project Final EIS was issued in March 2008, the Project was certificated by the FERC on April 30, 2008, and construction is anticipated to begin by June 2008. The similarity and proximity of the Gulf Crossing Project to the proposed Midcontinent Express Pipeline Project merits further consideration. As noted above, the FERC considers the general impact of constructing multiple pipelines to be primarily additive. Based on the project scope, geographic location, and preliminary information, we anticipate that the Gulf Crossing Project would result in environmental impacts similar to those of the proposed Project. The environmental impacts that would be associated with construction and operation of the Gulf Crossing Project are evaluated in detail in the Final EIS for that project, which is available for review on the FERC Internet website (Docket No. CP07-398-000).

3.13.1.2 Southeast Supply Header Project

Duke Energy Gas Transmission (DEGT) and CEGT proposed construction of a new 36-inch-diameter and 42-inch-diameter natural gas pipeline system that would extend approximately 269 miles southeast from Delhi, Louisiana to near Coden, Alabama. In addition to pipeline construction, the Southeast Supply Header Project would entail the addition of a total of 51,385 hp at three new compressor stations, including one located in Richland Parish, Louisiana, and 10,650 hp at two booster stations (not located in counties traversed by the Midcontinent Express Pipeline Project). The pipeline would connect onshore gas supplies from Texas and Louisiana to the markets in the Southeast, as well as interconnect with interstate systems in Mississippi and Alabama.

The FERC issued a Final EIS for the Southeast Supply Header Project on August 10, 2007, and the project was subsequently certificated on September 20, 2007. Construction of the project commenced in November 2007 and it is expected to be in-service by June 2008. The proposed Southeast Supply Header Project would cross numerous waterbodies, wetlands, and forested lands, including resources within five parishes or counties also traversed by the proposed Midcontinent Express Pipeline Project. Detailed information regarding the environmental impacts that would be associated with construction and operation of the Southeast Supply Header Project, including the Final EIS, can be viewed on the FERC Internet website (Docket No. CP07-44-000).





Legend

- Midcontinent Express
- Gulf Crossing
- Southeast Supply Header
- Southeast Expansion
- Carthage to Perryville
- East Texas to Mississippi Expansion

Note: Map depicts the approximate locations of interstate natural gas pipeline projects in Counties/Parishes Affected by the proposed Project.

MIDCONTINENT EXPRESS PIPELINE PROJECT

NATURAL GAS PIPELINE PROJECTS IN THE PROJECT AREA

DATE: May 2008

Figure 3.13-1

TABLE 3.13.1-1
Environmental Resources That Would Be Affected during Construction and Operation of Recent and Proposed Interstate Natural Gas Pipeline Projects in the Vicinity of the Proposed Midcontinent Express Pipeline Project

Project	Total Length/ Collocated Length (miles)	Land Requirements		Open-Cut Waterbody Crossings (number)	Wetlands Impacts (number / acres)	Forested Wetland Impacts (acres)	Forested Land Impacts During Constr. (acres)	Potentially Affected Federally Listed Species (number)	Residences within 50 Feet (number)	Potentially Affected National Register of Historic Places Sites (number)
		Construction (acres)	Operation (acres)							
East Texas to Mississippi Expansion	244/ 181	3,763	1,564	170 perennial 647 intermittent	309 / 122	84	1,777	11	4	1
Carthage to Perryville	172/ 40	2,498	1,248	104 perennial 136 intermittent	154 / 128	87	1,425	6	0	2
Southeast Supply Header	269/ 0	3,417	1,631	177 perennial 448 intermittent	246 / 239	249	2,171	14	6	6
Southeast Expansion	111/ 73	1,727	857	92 perennial 159 intermittent	129 / 89	48	1,329	8	18	9
Gulf Crossing	374/200	6,109	2,798	159 perennial 647 intermittent	164 / 144	107	1,216	16	12	8
Midcontinent Express Pipeline	510/263	8,310	3,158	231 perennial 774 intermittent	368 / 322	83	3,368	21	33	12

3.13.1.3 Southeast Expansion Project

Gulf South proposed construction of a new 42-inch-diameter natural gas pipeline system that would extend approximately 111 miles from Simpson County, Mississippi to Choctaw County, Alabama, largely adjacent or near the proposed Midcontinent Express Pipeline Project. In addition to pipeline construction, the Southeast Expansion Project would add three new compressor stations in the area affected by the proposed Midcontinent Express Pipeline Project. These new compressor stations would provide a total of 44,980 hp.

The FERC issued a Final EIS for the Southeast Expansion Project on August 3, 2007, and the project was subsequently certificated on September 28, 2007. Construction of the Southeast Expansion Project commenced in October 2007 and is still ongoing. The Southeast Expansion Project would cross numerous waterbodies, wetlands, and forested lands, including resources within parishes and counties also traversed by the proposed Midcontinent Express Pipeline Project. Based on the project scope, geographic location, and information that we have available, we anticipate that the Southeast Expansion Project would result in environmental impacts similar to those of the proposed Midcontinent Express Pipeline Project. Detailed information regarding the environmental impacts that would be associated with construction and operation of the Southeast Expansion Project, including the Final EIS, can be viewed on the FERC Internet website (Docket No. CP07-32-000).

3.13.1.4 East Texas to Mississippi Expansion Project

Gulf South constructed a new 36-inch- and 42-inch diameter natural gas pipeline that extends from DeSoto Parish, Louisiana to Simpson County, Mississippi. The East Texas to Mississippi Expansion Project extends for approximately 89 miles through the region that would contain the Midcontinent Express Pipeline Project and would be collocated with the proposed Project for a portion of that area. Total pipeline length is approximately 244 miles, and 76 percent or approximately 185 miles of the pipeline is collocated with existing utility rights-of-way. The project also includes modification and/or expansion of three compressor stations, including the addition of 40,302 hp at the Carthage Junction Compressor Station, and construction of two new compressor stations in Ouachita and Madison Parishes, Louisiana, with a combined addition of 70,302 hp. The new compressor stations are located in Madison and Ouachita Parishes, Louisiana.

A Final EIS was issued for the proposed East Texas to Mississippi Expansion Project on May 25, 2007, and Gulf South was granted permission to proceed with construction on June 27, 2007. The Project was placed completely in-service in February 2008. Based on the project scope, geographic location, and other information, the East Texas to Mississippi Expansion Project resulted in environmental impacts similar to those of the proposed Project. Detailed information regarding the environmental impacts associated with construction and operation of the East Texas to Mississippi Expansion Project, including the Final EIS, can be viewed on the FERC Internet website (Docket No. CP06-466-000).

3.13.1.5 CEGT Carthage to Perryville Project

CEGT completed construction of the Carthage to Perryville Project, a new 42-inch-diameter natural gas pipeline system extending from Carthage in Panola County, Texas to near Delhi in Richland Parish, Louisiana. The project consists of 172 miles of pipeline and two compressor stations that total 41,240 hp. The pipeline connects multiple receiving points in east Texas with CenterPoint's Perryville Hub and four new interstate pipeline interconnections. The CEGT Project parallels the East Texas to Mississippi Expansion Project route for approximately 51.4 miles in Ouachita and Richland Parishes, Louisiana. The FERC issued CEGT its Certificate on October 2, 2006. The construction of the Carthage

to Perryville Project is complete and the project is in-service. Detailed information regarding the environmental impacts associated with construction and operation of the CEGT Project are included in the EIS (FERC 2006) prepared by the FERC and can be viewed on the FERC Internet website (Docket No. CP06-85-000).

CEGT has proposed expansion of the facilities initially installed for the Carthage to Perryville Project. This expansion would include adding 15,000 hp through construction of an additional Solar Mars 100 turbine compressor unit at the existing Panola Compressor Station and adding 15,000 hp at the proposed Westdale Compressor Station, which would contain another Solar Mars 100 turbine compressor unit. Detailed information regarding environmental impacts associated with construction and operation of the Carthage to Perryville Expansion Project are included in the EA (FERC 2007a) prepared by the FERC and can be viewed on the FERC Internet website (Docket No. CP07-41-000).

3.13.2 Natural Gas Pipeline Projects Not Subject to FERC Jurisdiction

As described in Section 1.5, nonjurisdictional facilities for the proposed Project would include one compressor station and intrastate natural gas pipeline lateral, which would be constructed and operated by Enogex to enable this party to deliver natural gas to the proposed Midcontinent Express Pipeline Project at the Enogex interconnect (MP 0.0) in Bryan County, Oklahoma.

3.13.2.1 Enogex Compressor Station (Enogex)

Enogex proposes to construct and operate its Bennington Compressor Station, a new 24,000 horsepower compressor station and associated pipeline facilities, in Bryan County, Oklahoma. Construction of the Bennington Compressor Station is expected to commence in Spring 2008.

Enogex filed an application for a limited jurisdiction certificate authorizing the lease of interstate capacity from the FERC on June 20, 2007. Subsequently, Enogex filed its Environmental Summary Report with the FERC on January 16, 2008. The Bennington Compressor Station would require 26.2 acres for construction and permanently affect 20.0 acres for operation. The associated 16-inch and 30-inch tie-in pipelines would be constructed adjacent and parallel within a 150-foot-wide corridor that would be maintained in a 75-foot-wide corridor during operations. The pipelines would extend for about 1,800 feet and affect 6.2 acres during construction and 3.1 acres during operations. The compressor station would include four electric motor-driven reciprocating compressors.

The compressor station and pipelines would be located in a pasture dominated by Bermuda grass. A pond used by livestock is located within the compressor station site; however, the pond would not be affected by construction or operations. One intermittent waterbody would be crossed twice in the construction of the associated pipelines. No cultural resources were documented from field surveys or consultations with the Oklahoma SHPO or associated Native American Tribes. No threatened or endangered species are expected to be impacted by the construction or operation of the Bennington Compressor Station and associated pipelines. No residences are located within 0.25 mile of the proposed compressor station site. The four electric compressors would not generate any emissions since no hydrocarbons would be burned as fuel. The stationary sources would produce minimal emissions of VOC. Calculated noise levels would not exceed the 55dBA threshold at the three nearest NSAs. More detailed information regarding the environmental impacts associated with construction and operation of the Bennington Compress Station project is available for review on the FERC website under Docket No. CP07-403-000.

3.13.3 Unrelated Projects

3.13.3.1 Trans-Texas Corridor 69

A consortium of Texas state transportation planning agencies, including the Texas Department of Transportation (TxDOT) and the Texas Turnpike Authority, have proposed the Trans-Texas Corridor (TTC) Project. The TTC Project would consist of a system of new and existing highways that would provide dedicated travel lanes for cars and heavy trucks, incorporate light and heavy rail and other transit modes, and provide infrastructure for pipelines and other linear utilities. Elements of the TTC would be evaluated, designed, and constructed over the next 50 years (TTC 2006).

One major component of the Project, TTC 69, would extend from Texarkana, Texas to Mexico. One section of TTC 69 would be constructed in Cass County, Texas, in the general vicinity of the proposed Project route. An initial environmental study of TTC 69 will result in selection of a preferred 4-mile-wide corridor. That study is currently being conducted by TxDOT and is expected to be completed by 2008. If a preferred corridor is selected, potential route and design alternatives would be evaluated through an EIS conducted by the Federal Highway Administration (FHWA) and the Federal Transit Authority.

3.13.3.2 Interstate Highway 69

As part of the proposed Interstate Highway 69 project, the Louisiana Department of Transportation and Development (DOTD), in cooperation with the FHWA and the Arkansas Highway Transportation Department (AHTD), is conducting an environmental and location study for a new four-lane, limited-access highway that would be located between Highway 20 near Haughton, Louisiana, and U.S. Highway 82 near El Dorado, Arkansas (AHTD 2007). The proposed highway project is part of the greater 1,600-mile-long Interstate 69 corridor that would link Indianapolis, Indiana, to the lower Rio Grande Valley in Texas (DOTD 2007). The proposed Midcontinent Express Pipeline Project would cross the highway segment in question in Claiborne Parish, Louisiana.

3.13.3.3 U.S. Highway 171 Widening

As part of its Transportation Infrastructure Model for Economic Development (TIMED), a $40-billion 10-year program to improve 536 miles of state highways, the DOTD is adding a fourth travel lane to approximately 121 miles of U.S. Highway 171 between Shreveport and Lake Charles, Louisiana (Timed 2007). As of October 2007, construction of the U.S. Highway 171 project was approximately 76 percent complete (TIMED 2007). Construction is scheduled to begin on the remaining portions, including portions in Caddo and Bossier Parishes, Louisiana, by mid-2007, with completion of construction slated for 2010. The proposed Midcontinent Express Pipeline Project route would not intersect U.S. Highway 171 near the portions under construction.

3.13.3.4 U.S. Highway 167 Widening

As part of the TIMED Project, DOTD also is widening U.S. Highway 167 to four lanes along a 112-mile-long stretch between the Arkansas state line and Alexandria, Louisiana (Timed 2007). As of October 2007, construction of the U.S. Highway 167 widening was approximately 47 percent complete (TIMED 2007). The proposed Midcontinent Express Pipeline Project route would intersect U.S. Highway 167 near MP LA 83.7 in Lincoln Parish. This portion of U.S. Highway 167 is expected to be under construction between 2007 and 2010, which overlaps the proposed Project construction period.

3.13.3.5 U.S. Highway 165 Widening

Under another component of the TIMED program, DOTD has plans to expand a 173-mile portion of U.S. Highway 165 to four lanes between the Arkansas state line and Jennings, Louisiana (Timed 2007). As of October 2007, construction of the U.S. Highway 165 widening was approximately 54 percent complete (TIMED 2007). The TIMED Project schedule indicates that all construction work on U.S. Highway 165 started in mid-2007, except for the segment from Bastrop, Louisiana to Log Cabin, Louisiana, which would begin in mid-2008 (TIMED 2007). According to the schedule, all work would be completed by 2010. The proposed Midcontinent Express Pipeline Project route would intersect U.S. Highway 165 near MP LA 122.2 in Ouachita Parish, but this portion of U.S. Highway 165 has already been constructed. However, sections of U.S. Highway 165 located just north and south of the proposed pipeline route in Ouachita Parish would be under construction between 2007 and 2010.

3.13.3.6 Clinton/Raymond Road Interchange

The Mississippi Department of Transportation's (MDOT's) Clinton/Raymond Road Interchange Project is currently under construction near Jackson, Mississippi (Hinds County). The work began in September 2004 and is scheduled to be completed by 2008. The project includes complete reconstruction of the interchange, including a new bridge on Interstate 20 over Clinton/Raymond Road; a new loop in the southwest quadrant to improve access to the interstate for traffic southbound on Clinton/Raymond Road going eastbound on Interstate 20; improving U.S. Highway 80 to five lanes from Clinton/ Raymond Road to Springridge Road' and installation of signals at all interstate ramps and at the Clinton/ Raymond Road and U.S. Highway 80 intersections (MDOT 2007). The Midcontinent Express Pipeline Project would be located south of the Clinton/Raymond Road Interchange Project.

3.13.3.7 Stack Project (Interstate 20/U.S. Highway 49/I-55)

MDOT's Stack Project is an ongoing highway improvement plan for the interchange of Interstate 20, Interstate 55, and U.S. Highway 49, also known as "the Stack." The Stack is located in Hinds and Rankin Counties, Mississippi, in the vicinity of Jackson. The plan for the Stack was conceptually developed in the 1970s, construction began in 1992, and the Project is currently in Phase III. This phase includes reconstruction of the Interstate 20/U.S. Highway 49 interchange, including adding lanes to both U.S. Highway 49 south and frontage roads on U.S. Highway 49. Phase IV of the Stack Project is scheduled to be let when funds become available. This phase would include replacing the pavement on Interstate 20/Interstate 55 from Gallatin Street to the Pearl River. It also includes a new roadway from Gallatin Street to State Street (MDOT 2006). The Midcontinent Express Pipeline Project would be located south of the Stack Project.

3.13.3.8 Denbury Resources Carbon Dioxide Pipeline

Denbury Resources, Inc. has proposed construction of a carbon dioxide pipeline extending west from its Tinsley Field in Mississippi to near Delhi, Louisiana. This proposed project would affect Madison and Richland Parishes, Louisiana in addition to other counties in Mississippi not affected by the proposed MEP Project. As proposed, construction would be completed in 2008. Based on the anticipated project scope, geographic location, and preliminary information, we anticipate that the proposed Denbury Resources carbon dioxide pipeline project would result in environmental impacts similar to or somewhat less than those of the proposed Project.

3.13.3.9 Marvin Nichols Reservoir I and Dam

The Marvin Nichols I Reservoir and Dam site (approximately 71,406 acres) was proposed by the TWDB as part of a statewide water plan. The reservoir would be constructed in Red River, Titus, Morris, Franklin, and Bowie Counties, on the Sulphur River in northeast Texas. The capacity for this reservoir would be approximately 1,701,463 acre-feet of water, and approximately 602,000 acre-feet per year would be provided by the reservoir (TWDB 2007). The reservoir been designated as a unique reservoir site by the Texas Legislature. The designation, however, does not imply that the reservoir would be constructed. According to the State Bill 3, there is a termination date on the designation for any reservoir whose project sponsor has not voted funding for permitting or construction by September 1, 2015. The proposed reservoir would serve as a municipal water source for the Dallas/Ft. Worth metropolitan area.

Construction of the reservoir would result in inundation of approximately 30,000 acres of bottomland hardwood forest along the Sulphur River Bottom West/Cuckoo Pond bottomland hardwoods area, which has been designated as a Priority 1 area according to the FWS *Bottomland Hardwood Protection Plan*. A Priority 1 area is an "excellent quality bottomlands of high value to the key waterfowl species." In addition, approximately 42,000 acres of mixed forest and farming communities would be impacted by construction of the reservoir. Construction of the new reservoir and associated water pipelines would result in the loss of terrestrial wildlife habitat, negative impacts to the timber industry, alteration of the natural flow of the river and vegetation in the area, and a permanent loss of rare forested acreage. However, the reservoir would increase the amount of aquatic and waterfowl habitat. The Midcontinent Express Pipeline Project would be constructed south (across Highway 71) of the Marvin Nichols Reservoir I and would not interfere with the proposed water project development.

3.13.3.10 George Parkhouse II Reservoir

The proposed George Parkhouse II Reservoir (14,387 acres) would be located in Lamar and Delta Counties, Texas, on the North Sulphur River. The capacity for the Parkhouse II Reservoir would be approximately 330,871 acre-feet of water, and approximately 144,300 acre-feet of water per year would be provided by the reservoir (TWDB 2007). If built, lands impacted by the Parkhouse II Reservoir would be crossed by the Midcontinent Express Pipeline Project. Prior to construction of the proposed Project, MEP would identify construction measures necessary to mitigate the effects of the Parkhouse II Reservoir (if constructed) through consultations with TWDB.

3.13.4 Potential Cumulative Impacts of the Proposed Action

Potential cumulative impacts are grouped by resource area in this section. The potential impacts that we view as most likely to be potentially cumulatively significant are related to wetlands and waterbodies, vegetation and wildlife (including federally and state-listed endangered and threatened species), land use, and air quality and noise.

Except for the interstate pipeline projects described in Section 3.13.1, the FERC has no authority over permitting, licensing, funding, construction, or operation of the projects listed above. Federal, state, and local agencies must review these projects for compliance with requirements for construction of facilities at sites or places where a governmental license or permit may be required. The expansion or construction of intrastate pipelines, highways, and major water development projects would require state or federal permits and approvals to ensure compliance with Section 7 of the ESA; Sections 401, 402, and 404 of the CWA; the CAA, and Section 106 of the NHPA. Issuance of the necessary permits and approvals would reduce or avoid significant impacts from these facilities to wetlands and waterbodies, vegetation and wildlife (including threatened and endangered species), land use, and air quality and noise.

3.13.4.1 Wetlands and Waterbodies

Construction and operation of the Midcontinent Express Pipeline Project would result in both short-term and long-term impacts to waterbodies and wetlands. The short-term impacts such as soil or sediment disturbance would dissipate over a period of weeks, while longer-term impacts, such as regrowth of forested wetlands within temporary construction rights-of-way, would persist for months or years. The primary impacts to wetlands and waterbodies during operation of the proposed pipeline would be associated with routine right-of-way maintenance. All such maintenance activities would comply with applicable federal regulations and MEP's Plan and Procedures (see Section 2.3) but would continue throughout the life of the proposed Project.

If approved and constructed, the proposed Project and other reasonably foreseeable future projects would impact wetlands and would include permanent loss or conversion of some existing wetlands (see Section 3.4). Elements of these projects with the potential to affect wetlands and waterbodies would be subject to review and approval under Section 404 of the CWA, as administered by the COE, as well as state and local wetland regulations (see Section 1.3). Any permanent or long-term impacts to wetlands and waterbodies would require appropriate mitigation. Construction of the proposed Project would affect 368 wetland areas, resulting in disturbance of a total of approximately 322 acres of wetlands, including approximately 83 acres of forested wetland impacts (combined impacts of main line facilities and CenterPoint Lateral facilities). In Section 3.4, we have included recommendations for the development of site-specific wetland crossing plans in select areas to further minimize forested wetland effects. MEP has also proposed that compensatory mitigation for wetland impacts would be provided through the purchase of wetland mitigation bank credits in the area of the proposed Project.

Construction of the proposed Project would result in 231 perennial and 774 intermittent stream crossings. As described in Section 3.3, MEP proposed to cross 39 streams, including two streams located along the CenterPoint Lateral, via the HDD method. These streams include the Mississippi River and 26 additional major waterbodies, Louisiana Natural and Scenic Rivers (Bayou Dorcheat and Bayou D'Arbonne), and four NRI-listed streams (Bayou D'Arbonne, Big Black River, Pearl River, and Chickasawhay River). MEP is currently evaluating many additional HDD crossings and we have recommended development of site-specific crossing plans in consultation with FWS for numerous additional waterbodies in Section 3.3. These site-specific plans and/or use of HDD would avoid direct impacts to waterbodies and minimize impacts to riparian vegetation at those crossings. Although impacts to surface waters could occur during the HDD installation process, either through an inadvertent release of drilling fluids (frac-out) or through accidental fuel and chemical spills, the likelihood and potential damage associated with such events would be greatly reduced by the implementation of MEP's DDCP and SPCC Plan, which are included as components of the Project EMCP.

Because most of the projects listed in Table 3.13-1 are located within the same major watersheds that would be crossed by the proposed Project pipeline, and because some of these projects would likely involve direct and indirect waterbody impacts, the proposed Project and other reasonably foreseeable future projects would result in some cumulative impacts to waterbodies. However, because the Midcontinent Express Pipeline Project would not involve construction of permanent diversions or dams, impacts to surface water quality would be temporary. These temporary impacts would include runoff from construction areas, temporary and localized increases in turbidity and sedimentation associated with in-water construction, and withdrawal and discharge of surface waters for hydrostatic testing of pipeline segments. As described in Section 3.3, these effects would be relatively minor and would be further minimized by implementation of MEP's Procedures and the recommendations included in this EIS.

For these reasons, we believe that the cumulative impacts of the Midcontinent Express Pipeline Project and the projects listed in Table 3.13-1 on wetlands and waterbodies would be minor.

3.13.4.2 Vegetation and Wildlife

Construction of the proposed Project and other reasonably foreseeable future projects could result in cumulative impacts on native vegetation and associated wildlife. These cumulative impacts would be most significant if (1) the projects were constructed at or near the same time and within close proximity of one another; and (2) the affected vegetative communities would take a long time to recover. The proposed Project, if approved, would impact native vegetative communities during construction, including approximately 3,368 acres of upland forest and 672 acres of pine plantation. The proposed roadway improvement projects, particularly the widening projects, listed in Table 3.13-1 are not likely to significantly impact forests or other native plant communities, as these projects would largely be sited within existing, disturbed roadway rights-of-way. The proposed Marvin Nichols I Reservoir and George Parkhouse II Reservoir Projects, if constructed, would result in considerable impacts to vegetation and wildlife resources, but impacts would likely be offset through compensatory mitigation (e.g., habitat restoration or conservation) and creation of new, aquatic habitats. Given the similar character and timing, impacts to forested land and other native vegetative communities associated with construction of the Carthage to Perryville, Southeast Expansion, Southeast Supply Header, East Texas to Mississippi Expansion, and Gulf Crossing Projects could result in a cumulative effect on vegetation and wildlife resources when considered in conjunction with the proposed Project.

Cumulative impacts within a region, such as lost acreage of forestland, are additive. Furthermore, many wildlife species depend on mature contiguous tracts of forest to sustain their migratory and reproduction cycles. These species include dozens of migratory songbirds and terrestrial mammals that are not migratory and require large tracts of forest to support their home ranges. The impacts of fragmentation can be immediate and significant because population levels for many such species are currently low or on the decline.

The extent and duration of habitat fragmentation and other cumulative impacts to wildlife habitat associated with construction of the proposed Project and other reasonably foreseeable future projects would be minimized by siting these projects to the greatest extent practicable through existing maintained rights-of-way and other disturbed areas. The proposed Midcontinent Express Pipeline Project route would be collocated with or parallel existing utility rights-of-way where possible, thereby minimizing impacts to previously undisturbed vegetation. The proposed Project pipeline route would parallel existing utility rights-of-way for approximately 263 miles, or about 51 percent of the proposed route for the Project main line and CenterPoint Lateral facilities combined (see Section 2.2 and Appendix D). The FWS and DOI, as well as the public, have expressed concerns about impacts to migratory birds and associated impacts to large forested tracts. To further account for these impacts, we recommended in Section 3.6 that MEP develop a migratory bird conservation plan developed in consultation with FWS that also considers associated impacts to large, relatively unfragmented forested tracts. Additionally, approximately 40 percent of the proposed pipeline route's length would traverse agriculture, pasturelands, or open lands that would typically experience rapid revegetation. Further, MEP would implement the mitigation measures outlined in its Plan and Procedures to encourage the regrowth of native vegetation and discourage the spread of exotic or noxious plant species.

The DOI also expressed concern regarding two other issues that could reduce cumulative impacts for the Gulf Crossing and proposed MEP Projects: synchronization of construction schedules and joint rights-of-way maintenance. The FERC considered the possibility of synchronizing the construction schedules of the Gulf Crossing and proposed MEP Projects, particularly where the two projects would be collocated. However, the two Projects are on differing regulatory and natural gas delivery timelines, and in order to deliver needed natural gas to customers in a timely manner, such synchronization is not practical or feasible. The FERC would require both Projects to adequately restore and maintain vegetation along the disturbed rights-of-way of the proposed Projects following construction. Further,

where the two Projects would be collocated and would parallel an existing right-of-way, the two Projects typically would be located on opposite sides of the existing corridor, with little or no chance that one Project would disturb the same area as the other during construction. The FERC discussed this issue with staff of the FWS-Arlington, Texas office in a conference call on March 31, 2008 and FWS staff understood these considerations.

The FERC also considered the possibility of requiring joint, simultaneous maintenance (i.e., mowing) of the permanent rights-of-way for the Gulf Crossing and proposed MEP Projects in areas where they would be collocated. However, our biologists believe that this action would not necessarily reduce impacts to wildlife. Rather, we believe that it is likely that by spacing the timing of mowing apart temporally within a relatively small area, that impacts could be reduced and that resident wildlife could have more escape and refuge habitats available during these periodic disturbances. The FERC also discussed this issue with staff of the FWS-Arlington, Texas office in a conference call on March 31, 2008 and FWS staff acknowledged these factors.

Twenty-one federally listed or candidate species and a number of state-listed threatened, endangered, and/or special-status species would be potentially impacted by construction activities associated with the proposed Project. As described in Section 3.7, with implementation of our recommendations for mitigation to avoid and minimize impacts, we believe that the proposed Project would not significantly affect any federally listed species. However, if other reasonably foreseeable future projects were to impact the same habitats as the proposed Project route, cumulative impacts to these listed species could occur. Because protection of threatened, endangered and other special-status species is part of the federal and state permitting processes, impacts to such species would likely be reduced or eliminated through conservation and mitigation measures identified during those relevant permitting processes. Consequently, we believe that the potential for cumulative impacts to vegetation and wildlife resources would be relatively small and any such effects would be minor.

3.13.4.3 Land Use

Construction of the Midcontinent Express Pipeline Project and other reasonably foreseeable future projects would result in temporary and permanent changes to land use within the proposed Project area. The proposed Project would encumber a total of approximately 8,310 acres of land during construction. Approximately 41 percent of that land would be forest land, 16 percent would be agricultural land, and 8 percent would be pine plantation land. Open land, residential, commercial/industrial, and open water land cover and uses would also be affected. While most of these impacts would be temporary, construction of the proposed Project would result in some permanent land use changes, including conversion of approximately 300 acres of pine plantation and 1,460 acres of forested uplands and wetlands to maintained utility rights-of-way.

The land requirements and selected land use impacts associated with the Carthage to Perryville, Southeast Expansion, Southeast Supply Header, East Texas to Mississippi Expansion, and Gulf Crossing Projects are listed in Table 3.13.1-1. Land use impacts associated with these pipeline projects could result in a cumulative effect when considered in conjunction with the proposed Project. Because all of these projects except for the Southeast Supply Header Project were constructed, are being constructed, or are proposed to be constructed largely within or adjacent to existing maintained rights-of-way, the impact of land use changes would be reduced. Unlike roadway projects, which would permanently convert large areas of land to paved impervious surface, much of the land affected during construction of the proposed Project and the other pipeline projects considered in our analysis would be restored and allowed to revert to preconstruction uses and conditions once pipeline installation was complete. Because non-woody vegetation would be expected to return to preconstruction conditions over the short term, impacts to acreage classified as agriculture, pasture land, or open land would be short term and minor. Cleared

forestland and pine plantation located outside of permanently maintained rights-of-way would take many years to return to preconstruction conditions, with the duration of recovery dependent on the types and ages of trees removed, resulting in long-term impacts. However, given the prevalence of these land uses and cover types within the affected counties and parishes, we believe that cumulative impacts to land use would be relatively minor.

3.13.4.4 Air Quality

Air quality would be affected by construction and operation of the proposed Project and other reasonably foreseeable future projects. Construction of these projects would temporarily impact air quality by generating emissions from operation of fossil-fueled construction equipment and fugitive dust from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. However, the majority of impacts to air quality would occur during operation of these projects. The proposed Midcontinent Express Pipeline Project and the other natural gas pipeline projects considered in our analysis would all contribute to ongoing air emissions associated with operation of compressor stations. The proposed or planned roadway improvements would also likely contribute increased levels of air emissions as a result of increased vehicular traffic.

Because construction-related air emissions would be temporary and localized, they would be unlikely to contribute significantly to cumulative long-term air quality impacts. Air emissions from operations of the proposed Project and the other projects listed in Table 3.13-1 would be additive because they would be discharged into a shared air basin. However, all counties and parishes in which the proposed Project would be constructed are in attainment for all NAAQS criteria pollutants. Furthermore, each of the projects listed in Table 3.13-1 would be required to meet all applicable federal and state air quality standards. For these reasons, we believe that potential cumulative impacts to air quality would be relatively minor.

3.13.4.5 Noise

Potential noise impacts associated with the proposed Project and those projects listed in Table 3.13-1 would occur during construction and operation. Because of the linear nature of these projects, construction-related noise impacts would tend to be of short duration in a given area. Furthermore, because most construction activities would be limited to daylight hours, construction-related noise impacts would not occur at night for the most part. Potential noise-related impacts during operation of the proposed Project and the other pipeline projects listed in Table 3.13.1-1 would primarily be limited to the vicinity of the associated compressor stations. As described in Section 3.11, the estimated noise that would be generated by the proposed Lamar, Atlanta, Perryville, and Vicksburg Compressor Stations, as well as the Delhi Booster Station, would meet acceptable levels at the nearest NSA; but we are recommending monitoring to ensure that no impacts occur.

Noise emissions from compressor station operations may be additive with noise-generating elements of other existing or reasonably foreseeable future projects if they are located near a common NSA. The proposed Delhi Booster Station would be located within 1 mile of an existing CenterPoint compressor station, but noise modeling indicated that no significant impact to the noise environment would result from typical operations at the Delhi Booster Station based on estimated existing noise levels. No other compressor station, roadway improvement, or other noise-generating source for the identified projects would be located within 1 mile of any of the proposed compressor stations; therefore, we believe that cumulative impacts resulting from additional noise would be negligible.

3.13.5 Conclusions

In the event that the Midcontinent Express Pipeline Project under our review is certificated, it and the Gulf Crossing Project would be constructed within the same general area as several other recently constructed and/or certificated interstate natural gas pipeline projects, and the effects of these actions could overlap in time. Additionally, the project scopes, construction methods, and overall impacts would be similar. Though the unrelated projects identified in our cumulative impact analysis are different from the proposed Project, they would affect similar resources. The nonjurisdictional project identified in our analysis would also be constructed within a similar timeframe and using similar construction methods; however, any potential contribution to cumulative impacts of the proposed Project would be negligible due to the relatively small scope of that project. The unrelated projects identified in our cumulative impact analysis are of a different nature than the proposed Project but would affect similar resources. Although each of these unrelated projects would result in temporary and minor effects during construction, each project would be designed to avoid or minimize impacts to wetlands, waterbodies, protected and special-status species, and other sensitive resources. Additionally, significant unavoidable impacts to sensitive resources resulting from these projects would be mitigated, and mitigation generally leads to avoidance or minimization of cumulative impacts. We therefore consider that the potential cumulative impacts of the interstate pipeline projects subject to our jurisdiction and review have been or would be minimized.

The FERC considers a variety of factors when evaluating potential pipeline routes proposed by applicants. One of these factors, but not necessarily the predominant factor, is collocation with existing utility corridors. Selection of a route that is collocated with an existing and maintained right-of-way may have several advantages over a route in an undisturbed or "greenfield" area. Some of these advantages include reduction in fragmentation of forested habitats, expansion of an existing land use (i.e., maintained right-of-way) instead of introduction an entirely new one, reduced impacts to wildlife species found primarily in undisturbed habitats, and decreased visual impacts. For these reasons, existing rights-of-way may appear attractive for the routing of newly proposed projects, and newly constructed rights-of-way may also similarly attract future projects. However, we recognize that collocation with existing utility corridors may in some cases also have negative consequences to particular tracts of land such as small, privately held properties or managed sites, such as WRP lands. Although collocation generally tends to reduce or minimize overall cumulative impacts, the cumulative impacts of two or more rights-of-way at individual properties or managed sites may be magnified. We have attempted to minimize the potential cumulative impacts of the proposed Project to the greatest extent possible through coordination with participating resource agencies and affected parties, consideration of route alternatives and variations (see Sections 4.3 and 4.4), and development of additional mitigation measures that we believe would appropriately reduce the environmental impacts resulting from construction and operation of the proposed Project.

We believe that impacts associated with the proposed Midcontinent Express Pipeline Project would be relatively minor, and we have included numerous recommendations in this EIS to further reduce the environmental impacts associated with the proposed Project. The environmental impacts associated with the proposed Project would be minimized by careful project routing, development of site-specific plans with agency input, utilization of HDD techniques to avoid and minimize impacts to some sensitive resources, construction and operation in accordance with applicable laws and regulations, and implementation of appropriate mitigation measures. Consequently, only a small cumulative effect is anticipated when the impacts of the proposed Project are added to those of past, present, or reasonably foreseeable future projects.