4.0 ALTERNATIVES

As required by NEPA, we have evaluated several alternatives to the proposed East Texas to Mississippi Expansion Project to determine whether they would be technically and economically feasible and environmentally preferable to the proposed action. Our alternatives analysis includes alternatives proposed by the general public, as well as other federal and state resource agencies. It considers the environmental differences resulting from each alternative as well as the alternative's ability to meet the proposed Project's objectives.

We considered the No Action or Postponed Action Alternative, alternative energy sources, the effects of energy conservation, system alternatives, route alternatives, route variations, and aboveground facility site alternatives. We also considered the potential impacts to environmental resources and land uses in our alternatives analysis. We evaluated alternatives that would avoid or minimize impacts to environmental resources such as wetlands and waterbodies, and to land uses such as timber production, and federally and state-managed lands.

The following evaluation criteria were used to determine whether or not an alternative would be environmentally preferable:

- significant environmental advantage over the proposed Project;
- ability to meet the proposed Project objectives; and
- technical and economic feasibility and practicability.

4.1 NO ACTION AND POSTPONED ACTION ALTERNATIVE

The FERC has three alternative courses of action in processing an application for a Certificate: (1) grant the Certificate with or without conditions, (2) deny the Certificate, or (3) postpone action pending further study.

Implementation of the No Action Alternative would require the Commission to deny Gulf South a Certificate to construct, own, operate, and maintain the proposed Project. Without the issuance of a Certificate, Gulf South would not be able to construct the proposed Project and therefore the environmental impacts identified in this EIS would be eliminated. However, the objectives of the proposed project would not be met and it is likely that customers would seek alternative projects and/or sources of energy that may result in greater impacts than those described in this EIS. As discussed in Section 1.1, nationwide consumption of natural gas is projected to increase by more than 20 percent by 2025, and natural gas derived from domestic sources will account for the majority of the total U.S. consumption (EIA 2006a). By 2025, natural gas demand in the Northeast and Midwest regions is projected to increase by 13 and 25 percent, respectively (EIA 2006b). Onshore production of natural gas from unconventional sources (e.g., shale, tight sands, and coal bed methane) is expected to be a major contributor to future domestic natural gas supplies (EIA 2006a). The proposed Project would supply up to 1.7 Bcf/d of natural gas from unconventional sources (i.e., Bossier Sand and Barnett Shale fields). Since the objectives of the proposed project would not be met by implementing the No Action Alternative and the effects of other customer-driven projects are unknown, we believe that this alternative is not preferable to the proposed action.

Implementation of the Postponed Action Alternative would require the Commission to delay its determination on whether or not to grant Gulf South a Certificate. Postponing the Commission's action on this application could allow for further study of the environmental impacts resulting from construction and operation of the proposed Project; however, postponement would at a minimum delay and could also change the environmental impacts described in this Final EIS. Based on the information provided in Gulf South's

application, its subsequent filings, responses to environmental information requests, and our analysis of this information and consultations with other responsible state and federal resource agencies, we believe that use of the Postponed Action Alternative to allow for further study of the proposed Project is not necessary at this time. We believe that delaying the effects described in this Final EIS would not significantly change these effects. Therefore, we believe that this alternative is not preferable to the proposed action.

Alternative Energy Sources

Several alternative energy sources to natural gas currently exist, such as petroleum and coal-based energy, nuclear power, hydropower, and other energy sources, including renewable energy technologies. Petroleum and coal-based energy are commonly used and found throughout the United States; however, relative to natural gas, the use of petroleum or coal-based energy would result in greatly increased emissions of pollutants such as NO_x, SO_2, and CO_2. The increased emission of these pollutants would result in reductions to air quality. In addition, the use of petroleum and coal-based energy would result in numerous secondary impacts associated with their mining, extraction, transportation, and refinement. The use of this alternative would not meet the proposed Project's objectives and would not likely result in a significant reduction of environmental impacts; therefore we believe that the use of this energy source is not preferable to the proposed action.

Although there has recently been renewed interest in nuclear power production, growth in nuclear generating capacity will account for only about 10 percent of total U.S. generating capacity by 2019, and it is expected to remain at that level through 2030 (EIA 2006a). Additionally, regulatory requirements, cost considerations, and public concerns make it unlikely that new nuclear power plants would be sited and developed to serve the markets targeted by the proposed Project within a timeframe that would meet the objectives of the proposed Project. Therefore, we believe use of this energy source is not preferable to the proposed action.

Though efficiency upgrades at existing hydropower facilities are expected to produce incremental additions of power production in the coming years, it is unlikely that new and/or significant sources of hydropower would be permitted and brought online as reliable energy source alternatives to the proposed Project. Federal, state, and local initiatives will likely contribute to an increase in the availability and cost effectiveness of non-hydropower renewable energy sources such as wind, solar, tidal, geothermal, and biomass. For example, state and local initiatives have increased the availability of wind power-derived energy to local consumers in Texas (TREIA 2006), and renewable energy is playing a larger role in the Mid-Atlantic and Northeast regions of the United States (CSC 2004, NYSERDA 1999). Nevertheless, the percentage of electricity generated from non-hydropower renewable energy sources at the national level is projected to increase to only 3.2 percent by 2025 (EIA 2006a), which would offset only a small part of the projected national energy demands. Therefore, we believe that these other energy sources would not be able to meet the overall objectives of the proposed Project and as a result are not preferable to the proposed action.

Energy Conservation Alternatives

An increase in energy conservation measures employed throughout the proposed Project's market area could also potentially decrease or slow the nation's increasing energy demands. However as noted in Section 1.1, energy demand in the United States has been increasing steadily with total energy consumption in the United States estimated to increase from 99.7 quadrillion BTU per year in 2004 to 127.0 quadrillion BTU per year in 2025 (EIA 2006). Natural gas usage will represent about 22 percent of all energy consumption in the United States by 2025. To maintain pace with growing energy demands, the EIA anticipates that consumption of natural gas in the United States will grow from 22.4 Tcf per year in 2004 to 27.0 Tcf by 2025. The growth in natural gas demand is being driven primarily by increased use of natural gas for electricity generation and industrial applications. Given the anticipated increases of energy consumption over the next

20 years, it is unlikely that voluntary energy conservation measures would be sufficient to offset increasing demands in general or affect the need for the proposed Project in particular.

4.2 SYSTEM ALTERNATIVES

System alternatives are alternatives to the proposed action that would make use of existing, modified, or proposed pipeline systems to meet the stated objectives of the proposed Project. Implementation of a system alternative would make it unnecessary to construct the proposed Project, although some modifications or additions to existing or proposed pipeline systems may be required to meet the objectives of the proposed Project. Modifications or additions to existing or proposed pipeline systems would result in environmental impacts that may be less than, similar to, or greater than those associated with construction and operation of the proposed Project. The purpose of identifying and evaluating system alternatives is to determine whether or not the environmental impacts associated with the construction and operation of the proposed Project would be avoided or reduced by using existing, modified or proposed pipeline systems.

Our analysis of system alternatives includes an examination of existing and proposed natural gas systems that currently or would eventually serve the markets targeted by the proposed Project, and considers whether those systems would meet the proposed Project's objectives while offering an environmental advantage over the proposed Project. Specifically, the system alternatives considered in our analysis include an expansion of existing overland natural gas pipeline systems (Existing Pipeline System Alternatives) and the construction of new natural gas pipeline systems (New Pipeline System Alternatives).

4.2.1 Existing Pipeline System Alternatives

Two existing pipeline systems, one using Gulf South's system and the other operated by CEGT, are located within the general vicinity of the proposed Project. Figure 4.2.1-1 depicts the location of the Gulf South System Alternative in relation to the proposed Project route, and Figure 4.2.1-2 depicts the location of the CEGT Pipeline System Alternative in relation to the proposed Project route. We evaluated the Gulf South and the CEGT Pipeline System Alternatives to determine whether the expansion of either of these existing systems would be able to meet the objectives of the proposed Project and result in significantly less environmental impacts than those associated with the proposed Project.

4.2.1.1 Gulf South System Alternative

Gulf South currently operates its interstate pipeline system in Texas, Louisiana, Mississippi, Alabama, and Florida. This alternative would use Gulf South's existing (or modified) natural gas delivery system to meet the proposed Project's objectives.

Modifying Gulf South's existing system to meet the proposed Project's objectives would require the construction of approximately 260.3 miles of 42-inch-diameter pipeline loop, about 3.3 miles of 36-inch-diameter lateral pipeline, and the installation of approximately 120,906 hp of compression. Table 4.2-1 illustrates a comparison of the requirements and environmental considerations of this system alternative and the proposed Project.

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Figure 4.2.1-1
Gulf South System Alternative

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Figure 4.2.1-2
CenterPoint Pipeline System Alternative

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TABLE 4.2-1
Comparison of the Gulf South System Alternative to the Proposed East Texas to Mississippi Expansion Project Route

Comparative Category	Unit	Proposed Route[a]	Gulf South System Alternative
Facility Requirements			
Pipeline length	Miles	243.6	260.3
Compressor station requirements	Number/hp	2 new, 1 expanded / 110,604	2 new, 1 expanded / 120,906
Land Requirements[b]			
Construction right-of-way	Acres	3,113.6	3,369.2
Permanent right-of-way	Acres	1,586.8	1,746.3
Environmental Considerations			
Waterbody crossings[c]	Number	359	375
Total Wetlands Affected by Construction[c]	Acres	230.3	161.3
Forested Wetlands Affected by Construction	Acres	60.6	75.1
Residential Lands Affected by Construction	Acres	2.9	186.3
Forested Lands Affected by Construction	Acres	1,527.5	1,340.3
Archaeological Sites Crossed	Number	3	7
Public lands crossed	Miles	0.2	5.8

Notes:

[a] Values reported are based on published data and mapping; therefore, the values shown may differ from actual values provided elsewhere in this document.

[b] Land requirements reported assume a 100-foot-wide construction right-of-way and a 60-foot-wide permanent right-of-way.

[c] Based on interpretation of U.S. Geological Survey topographic maps; number of blue-line stream crossings, and construction impacts to wetlands.

As indicated in Table 4.2-1, the proposed Project would affect fewer waterbodies, residential lands, and archaeological sites than the pipeline looping required under this system alternative. Although the proposed Project would impact more wetlands overall than the pipeline looping, less forested wetlands would be impacted by the proposed Project. Impacts to forested wetlands would be long term or permanent, while impacts to emergent or scrub-shrub wetlands would be short term or temporary. The pipeline looping would also result in the crossing of approximately 5.8 miles of the Jackson-Bienville WMA, which is managed by the LDWF and provides habitat for the federally endangered red-cockaded woodpecker. The proposed Project would avoid suitable habitats for red-cockaded woodpeckers and would use HDD methodology to cross a 1,000-foot-long corridor under the Ouachita WMA, thereby significantly minimizing impacts to WMAs. This technology could not be utilized to cross the Jackson Bienville WMA due to the extended length of crossing. Although the pipeline looping associated with the Gulf South System Alternative would be collocated with Gulf South's existing pipeline right-of-way, which generally minimizes environmental impacts, our analysis, as summarized in Table 4.2-1, indicates that the construction and operational impacts

associated with this system alternative would be measurably greater than those of the proposed Project. Furthermore, the proposed pipeline route would parallel/be collocated with existing utility rights-of-way for approximately 181.0 miles, or about 76 percent of the proposed route; therefore, the benefits gained from collocating with utility rights-of-way would still be realized with the proposed action.

Gulf South has indicated that its existing system is fully subscribed as a result of the increased demand for natural gas in the Gulf Coast, Midwestern, Northeastern, and Southeastern regions of the United States. Additionally, Gulf South's existing pipeline system is relatively older, consisting of low-pressure pipelines incapable of transporting the volumes of natural gas called for in the proposed action. Based on the characteristics of Gulf South's existing facilities and their fully subscribed status, we believe that this existing system would be unable to transport the volumes identified in the proposed action without significant modifications.

Based on the increased land requirements and pipeline length, potentially increased impacts to the federally endangered red-cockaded woodpecker, waterbodies, residential lands, and archaeological sites, we believe that the Gulf South System Alternative would not be preferable to the proposed Project.

4.2.1.2 CEGT Pipeline System Alternative

CEGT currently operates an interstate pipeline system in Texas, Louisiana, Oklahoma, and Arkansas, segments of which extend from near Carthage, Texas, to Delhi, Louisiana. Because this system ends in Delhi, Louisiana, it would only replace about two-thirds of the length of the proposed Project. The remaining 79 miles of pipeline needed to transport the gas from Delhi, Louisiana to Harrisville, Mississippi would still be required.

Because this system does not contain sufficient available capacity to transport the volumes of gas identified in the proposed action, it would need to be significantly expanded and modified to meet the proposed Project's objectives. Specifically, to add capacity for an additional 1.7 Bcf/d of natural gas to Delhi, Louisiana, approximately 190 miles of 42-inch-diameter pipeline looping, as well as significant additional compression, would need to be constructed. In the proposed action, approximately 149.0 miles of pipeline would be constructed to transport the gas to Delhi, Louisiana. Both the proposed Project and the system alternative would require about an additional 79 miles of pipeline to extend the system to the final delivery point in Mississippi.

Although much of the pipeline looping could be collocated with existing CEGT rights-of-way, construction of this length of pipeline looping within an assumed 100-foot-wide construction right-of-way would impact more than 2,275 acres of land, including wetlands and surface waters, while the proposed Project would only affect about 2,000 acres of land. The construction and installation of facilities necessary to extend this system from Delhi into Mississippi would result in essentially the same impacts as the same segment of the proposed Project.

Because the CEGT Pipeline System Alternative would be about 40 miles longer than the proposed Project, the potential environmental impacts would likely be greater than those associated with construction and operation of the proposed Project. Therefore, we believe that the CEGT Pipeline System Alternative would not be preferable to the proposed Project.

4.2.2 New Pipeline System Alternatives

The recently certificated Carthage to Perryville Project and the proposed SESH, Gulf Crossing, and Midcontinent Express Projects have been identified as potential interstate natural gas pipeline system alternatives to the proposed Project. The proposed SESH Project (CP07-44-000) Draft EIS was issued on

April 27, 2007. The Gulf Crossing and Midcontinent Express Projects are currently being reviewed under the Commission's pre-filing process. Figure 4.2.2-1 depicts the location of the Carthage to Perryville System Alternative in relation to the proposed Project route, and Figure 4.2.2-2 depicts the location of the SESH, Gulf Crossing, and Midcontinent Express System Alternatives in relation to the proposed Project route.

4.2.2.1 Carthage to Perryville System Alternative

The Carthage to Perryville Project consists of a 42-inch-diameter pipeline which when constructed would run easterly from Carthage, Texas to near Delhi, Louisiana. It is capable of transporting up to 1.2 Bcf/d of natural gas. However, the capacity of the Carthage to Perryville Project is fully subscribed. Additionally, the Carthage to Perryville Project does not extend into Mississippi. Since the Carthage to Perryville Project would be unable to transport the volumes of gas identified in the proposed action and the project does not extend into Mississippi, it would fail to meet the objectives of the proposed Project without significant modifications.

Modifying the Carthage to Perryville Project so that it could transport the required volumes of gas identified in the proposed action would require the construction of approximately 149 miles of additional pipeline parallel to its certificated pipeline and extending its certificated pipeline an additional 79 miles into Mississippi. This modification would require a significant redesign of the Carthage to Perryville Project and a re-examination of the environmental impacts of the project. Since the proposed Project is already collocated with the Carthage to Perryville Project for a significant portion of its length (approximately 97 miles), and the extension of the Carthage to Perryville Project would result in impacts similar to those of the proposed Project; we believe that this system alternative would not result in significantly less environmental impact than that of the proposed action. Therefore, we believe that this alternative would not be preferable to the proposed action.

4.2.2.2 SESH Project System Alternative

As proposed, the 42- and 36-inch-diameter SESH Project, which would run southeasterly from Delhi, Louisiana to Coden, Alabama, would be capable of transporting 1.14 bcf /d of natural gas. Although the proposed SESH Project would be located generally parallel to the proposed Project for approximately 20 miles, beginning near Delhi, Louisiana it would not extend further westward into Louisiana and would terminate in southeast Alabama over 100 miles from the termination point of the proposed Project. The proposed SESH Project also does not have sufficient unsubscribed capacity to transport the volumes of gas called for in the proposed action.

The proposed SESH project would not be able to transport the volumes of gas to the proposed locations without significant modifications. The SESH project would need to be significantly redesigned with looping and/or a larger diameter pipeline and lateral(s) to meet the objectives of the proposed Project. Since the proposed SESH Project would need to be significantly modified, and the impacts of those modifications would be similar or greater than those of the proposed Project and the time required to consider those modifications and analyze their impacts would significantly delay service, we believe that this alternative would not be preferable to the proposed action.

4.2.2.3 Gulf Crossing System Alternative

Gulf Crossing Pipeline Company, LLC proposes to construct a new 42-inch-diameter natural gas pipeline system that would convey approximately 1.65 Bcf/d of natural gas extending approximately 351 miles from Grayson County, Texas to Madison Parish, Louisiana. Approximately 11 miles of the eastern-most portion of the proposed Gulf Crossing Project would be collocated with the proposed East Texas to Mississippi

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Figure 4.2.2-1
Carthage to Perryville Project System Alternative

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Figure 4.2.2-2
Recently Proposed Project System Alternatives

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Project in Madison Parish, Louisiana. Since the Gulf Crossing Project does not extend into Mississippi, this system alternative would be unable to transport the volumes of gas identified in the proposed action to the Project terminus without significant modifications. The origins of the two projects are also located approximately 175 miles apart. Further, the proposed Gulf Crossing Project would not have sufficient capacity to transport the volumes of gas that it would require in addition to the East Texas to Mississippi Expansion Project; therefore, the Gulf Crossing System Alternative would require significant modifications, such as a larger diameter pipe or looping, to meet volume transportation needs.

Impacts associated with these significant modifications would result in similar or greater impacts than those of the proposed Project. Further, since the Gulf Crossing Project is currently in the pre-filing phase, the time required to consider these modifications and analyze their impacts would significantly delay service, we believe that this alternative would not be preferable to the proposed action.

4.2.2.4 Midcontinent Express System Alternative

Midcontinent Express Pipeline Company, LLC proposes to construct a new 30-inch-diameter, 36-inch-diameter, and 42-inch-diameter natural gas pipeline system that would extend approximately 494 miles from Bryan County, Oklahoma to Choctaw County, Alabama. The proposed Midcontinent Express Project would transport between 1.2 and 1.5 Bcf/d of natural gas through the region. Based on preliminary information, the proposed Midcontinent Express Project would be located near or collocated with the East Texas to Mississippi Project for approximately 68 miles in Madison Parish, Louisiana and western Mississippi, before continuing on to its terminus in western Alabama. Since the Midcontinent Express Project would originate in Oklahoma, the project would require significant modification to service the western Louisiana and eastern Texas interconnects. Further, the proposed Midcontinent Express Project does not have sufficient capacity to transport the volumes of gas that it would require in addition to the East Texas to Mississippi Expansion Project; therefore, requiring significant modifications, such as looping and/or a larger diameter pipeline, to meet volume transportation needs.

Since the proposed Midcontinent Express Project would have to be significantly modified, the impacts of those modifications would be similar or greater than those of the proposed Project, and the time required to consider those modifications and analyze their impacts would significantly delay service, we believe that this alternative would not be preferable to the proposed action.

4.3 ROUTE ALTERNATIVES

Route alternatives represent potential routes that the proposed Project could follow that vary significantly from the proposed route. A route alternative would deviate from the proposed route for its entire length or at least a large portion of its total length. Based on input provided to us by the general public, federal and state resource agencies, and our review of the proposed Project, we identified and evaluated three major route alternatives: the Northern Route Alternative and two Tallulah to Florence Route Alternatives. We evaluated each alternative to determine if either would avoid or significantly reduce environmental affects associated with the proposed Project.

4.3.1 Northern Route Alternative

The Northern Route Alternative would route the proposed pipeline adjacent to existing Gulf South facilities from Keatchie, Louisiana to Harrisville, Mississippi. This route alternative would be effectively the same as the Gulf South System Alternative described previously; therefore, our analysis of that system alternative and our belief that it would not be preferable to the proposed Project also apply to this route alternative.

4.3.2 Tallulah to Florence Route Alternatives

Based upon public comments, two Tallulah to Florence route alternatives were evaluated to determine if alternative routes in the eastern Louisiana and the Mississippi portions of the Project area would be preferable to the proposed Project alignment. Both Tallulah to Florence Route Alternatives would diverge from the proposed route at the Tallulah Compressor Station at MP 167.6 and would generally follow the route of the proposed SESH Project, crossing the Mississippi River just north of Letourneau, Mississippi (approximately 7 miles south of the proposed route) into Warren County, Mississippi. The two evaluated route alternatives would diverge at the Warren/Claiborne County line, where the Tallulah to Florence Route Alternative 1 would continue collocation with the SESH Project through Claiborne County before turning east to cross Copiah County towards the proposed Project terminus near Harrisville, Mississippi (Figure 4.3.2-1). Upon entering Claiborne County, the Tallulah to Florence Route Alternative 2 would be routed southeast towards the proposed terminus traversing Claiborne, Hinds, and Copiah Counties before returning to the proposed alignment near Harrisville (Figure 4.3.2-1).

We conducted a desktop evaluation to compare environmental impacts associated with the two route alternatives and the proposed alignment. Topographic maps, aerial photography, and other data were used to evaluate the approximate route alternative impacts. A comparison of the effects associated with the proposed Project alignment, Tallulah to Florence Route Alternative 1, and the Tallulah to Florence Route Alternative 2 is shown in Table 4.3.2-1.

TABLE 4.3.2-1
Comparison of Tallulah to Florence Route Variations and the Proposed Route

Evaluation Criteria	Proposed Route	Tallulah to Florence Route Alternative 1	Tallulah to Florence Route Alternative 2
Total Length (miles)	78	81	78
Construction Impacts (acres)	946	982	946
Permanent Impacts (acres)	567	589	567
Adjacent to Existing Rights-of-Way (miles)	31	0	0
Stream Crossings (number) [a]	60	63	69
Land Use Type	Forest, silviculture, agriculture	Forest, silviculture, agriculture	Forest, silviculture, agriculture

Note:

[a] Based on interpretation of U.S. Geological Survey topographic maps blue-line stream crossings.

The Tallulah to Florence route alternatives would not be collocated with any known existing rights-of-way, while the proposed Project route would be collocated with existing rights-of-way for approximately 31 miles, or about 43 percent of the route in the segment between Tallulah, Louisiana and Harrisville, Mississippi. All three routes would cross forested and agricultural areas, but the Tallulah to Florence route alternatives would traverse more forested lands in Claiborne and northern Copiah Counties compared to the proposed route that would primarily cross cleared agricultural lands over a similar distance in Hinds County. The proposed Project alignment would cross the Natchez Trace Parkway in an agricultural area in Hinds

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Figure 4.3.2-1
Tallulah to Florence Route Alternatives

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County, thus minimizing long-term visual effects associated with right-of-way maintenance. Both Tallulah to Florence route alternatives would cross the Natchez Trace Parkway in a heavily forested area; thereby resulting in a permanent adverse visual impact associated with vegetative removal to maintain a right-of-way. The Tallulah to Florence Route Alternative 1 would be approximately three miles longer than the proposed route and based on a review of topographic maps, we determined that it would affect a similar amount of resources as the proposed route, including waterbodies, wetlands, and wildlife. Environmentally, this route alternative would not significantly reduce impacts compared to those of the proposed route.

The Tallulah to Florence Route Alternative 2 would be approximately the same length as the Project route and would cross similar natural features including streams, wetlands, and topographic relief. Due to the similar route length and environmental features, effects associated with this route alternative would be comparable to the proposed Project alignment.

Because both route alternatives would not result in significantly less environmental impacts, would result in permanent visual impacts to the Natchez Trace Parkway, and would cross more mature forested lands and would not be collocated with existing utility rights-of-way, we have eliminated these alternatives from further consideration.

4.4 ROUTE VARIATIONS

Route variations differ from system or major route alternatives in that they are identified to resolve or reduce construction impacts to localized, specific resources such as cultural resources sites, wetlands, recreational lands, residences, landowner requests, and terrain conditions. Because route variations are identified in response to specific local concerns, they are often the result of landowner comments. While route variations may be a few miles in length, most are relatively short and in proximity to the proposed route. We have considered a variety of factors in identifying and evaluating route variations, including length, land requirements, the number of landowners affected, and potential for reducing or minimizing impacts to natural resources.

During the pre-filing process, Gulf South refined its proposed route based on discussions with landowners, resource stewards, project engineers, and our input to avoid or minimize impacts to natural or cultural resources, reduce or eliminate engineering and constructability concerns, and/or avoid or minimize conflicts with existing land uses. After filing its application, Gulf South also filed several additional route modifications that better aligned the proposed route with existing rights-of-way, avoided sensitive resources, resolved landowner issues, and addressed constructability concerns. These adopted minor route variations are described in Table 4.4-1 and are depicted in the figures provided as Appendix G of this EIS. These route modifications were incorporated as part of the proposed Project that we evaluated in Section 3.0.

As noted in Table 4.4-1, some areas have been subjected to minor route variations on more than one occasion. Minor route variations proposed by Gulf South in November 2006 and March 2007 often represented slight shifts in alignment based upon previously adopted proposed alignments. All of the adopted minor route variations for the proposed Project are included in Table 4.4-1 and in Appendix G. Some of these adopted minor route variations are no longer applicable, but are included to illustrate the development of the proposed Project's alignment in response to alternatives considered.

TABLE 4.4-1
Minor Route Variations Incorporated into the Proposed
East Texas to Mississippi Expansion Project

Minor Route Variation	County/Parish	Milepost Range[1]	Reason for Incorporation
Adams	DeSoto, LA	0.8 to 2.0	Avoid a residence
El Paso	DeSoto, LA	7.2 to 7.7	Offset to provide a safe distance to an existing pipeline
Pond	DeSoto, LA	8.0 to 8.2	Avoid a pond
Bethlehem	DeSoto, LA	8.2 to 9.0	Avoid a production facility and a pond
Myrtle Hill Road	DeSoto, LA	9.0 to 9.3	Avoid two well pad sites
Bates Road	DeSoto, LA	10.3 to 10.6	Avoid a production facility
I-49	DeSoto, LA	14.7 to 14.8	Realign for crossing I-49
CrossTex	DeSoto, LA	8.2 to 18.6 [2]	Offset to avoid recently acquired CrossTex right-of-way
Carson	Red River, LA	27.3 to 27.7	Realign to avoid slough east of the Red River and associated constructability issues
Highway 783	Red River and Bienville, LA	35.8 to 36.1	Avoid a residence and Highway 783
Water Line	Bienville and Jackson, LA	63.7 to 69.8	Offset to avoid existing water line
Dugdemona	Jackson, LA	69.8 to 72.8	Reduce wetland impacts
CenterPoint Crossing No. 1	Jackson, LA	69.8 to 70.2 [3]	Realign to avoid difficult CEGT Carthage to Perryville Pipeline crossing
Dugdemona II	Jackson, LA	70.6 to 72.5 [2]	Realign to avoid creating an isolated “island” of vegetation per landowner request
House	Jackson, LA	75.6 to 75.8	Realign to avoid site of planned house per landowner request
Landfill	Jackson, LA	76.9 to 77.6	Avoid crossing a landfill
Residential	Jackson, LA	86.7 to 88.0	Avoid a residence and a pond
Slaughter	Ouachita, LA	110.3 to 110.7	Realign to abut CEGT’s proposed right-of-way
Ouachita River / TGT	Ouachita, LA	110.9 to 112.3 [3]	Realign to avoid CEGT’s proposed right-of-way and TRT meter station to avoid wetland impacts
Sartor	Richland, LA	122.5 to 124.1	Avoid impacts to the U.S. Fish and Wildlife Service-administered W.W. Farms Conservation Easement and row crops

TABLE 4.4-1 (continued)
Minor Route Variations Incorporated into the Proposed
East Texas to Mississippi Expansion Project

Minor Route Variation	County/Parish	Milepost Range [1]	Reason for Incorporation
CenterPoint Tract No. 2	Richland, LA	126.2 to 126.5	Avoid CEGT above ground facilities
Bee Bayou	Richland, LA	130.8 to 131.1	Avoid CEGT easement and minimize impacts to WRP
Cypress Creek	Richland, LA	Privileged	Avoid cultural resource
CGT	Richland, LA	148.6 to 150.6	Avoid CEGT aboveground facilities
Bayou Macon	Richland and Madison Parish, LA	148.8 to 150.6 [3]	Avoid USFWS fee-owned tract
Burks	Madison, LA	150.6 to 152.1	Avoid agricultural impacts
Burns WRP	Madison, LA	154.0 to 155.5	Avoid USFWS fee-owned tract
Charles Brown	Madison, LA	158.2 to 159.6	Avoid lands with undetermined ownership and constructability issues
Tallulah	Madison, LA	167.5 to 167.6	Necessary to route into the proposed Tallulah Compressor Station
Collins WRP	Madison, LA	171.9 to 172.7	Realign to minimize impact to WRP property as requested by the NRCS
Entergy	Madison, LA	172.7 to 176.7	Realign to avoid creating an isolated strip of vegetation per landowner request
Newton WRP	Madison, LA	176.8 to 177.1	Realign to minimize impact to WRP property as requested by the NRCS
Archaeology Site 1	Madison, LA	Privileged	Avoid potential archaeological resource
Baxter-Wilson	Warren, MS	181.4 to 186.5 [2]	Realign to cross to the north of the Baxter-Wilson Power Plant per Entergy's request
Highway 61	Warren, MS	184.5 to 188.3	Avoid potential future casino access
Archaeology Site 2	Warren, MS	Privileged	Avoid potential archaeological resource
Fourteen Mile Creek	Hinds, MS	198.0 to 199.1	Avoid multiple creek crossings
Natchez Trace Parkway and Brown Loam Experiment Station Reroute	Hinds, MS	207.0 to 213.9	Parallel an existing crossing of the Parkway and avoid research station
Archaeology Site 3	Hinds, MS	Privileged	Avoid cultural resource
Archaeology Site 4	Hinds, MS	Privileged	Avoid potential archaeological resource
Neil Collins Road	Hinds, MS	216.0 to 216.2	Realign to avoid one landowner at the request of an adjacent landowner
Davis	Hinds, MS	224.4 to 224.8 [2]	Realign to minimize impact to subdivided property per landowner request
Valley Campbell Road	Hinds, MS	224.5 to 229.0	Avoid a residence

TABLE 4.4-1 (continued)
Minor Route Variations Incorporated into the Proposed
East Texas to Mississippi Expansion Project

Minor Route Variation	County/Parish	Milepost Range [1]	Reason for Incorporation
Reroute	Hinds, MS	227.6 to 228.7 [2]	Realign to avoid creating an isolated strip of vegetation and avoid impacts to future development per landowner request
Marble	Hinds and Copiah, MS	229.0 to 230.5	Realign to avoid property per landowner request
Terrain	Simpson, MS	235.2 to 238.6	Avoid difficult construction terrain
Harrisville	Simpson, MS	238.5 to 238.6	Realign to avoid steep side slopes and associated constructability issues

Notes:

[1] Milepost ranges may be different than those shown in Appendix D due to alignment changes before and after filing.

[2] Reroute proposed in November 2006 that modifies the proposed alignment based in part on previously adopted reroutes.

[3] Reroute proposed in March 2007 that modifies the proposed alignment based in part on previously adopted reroutes.

As part of our alternatives analysis, we have also evaluated variations to avoid or reduce impacts to sensitive environmental resources identified through our review of topographic maps, aerial photography, and other available information. These sensitive environmental resources include wetlands and waterbodies, as well as special land uses such as WRP easements and Sixteenth Section lands. Other specially managed areas located in the vicinity of the proposed Project, including the Tensas River NWR, the Ouachita and Bayou Pierre WMAs, and FWS fee-owned lands, would either be avoided entirely or surface impacts would be avoided through use of special construction techniques such as HDD. In addition to avoiding surface impacts to FWS and WMA lands, Gulf South has also developed a FWS-approved construction and operation plan for a one-mile-long portion of the Project alignment located on a WRP site near the Tensas NWR. That area was identified by FWS as being significant to on-going black bear recovery efforts. Sections 3.6, 3.7, and 3.8 further describe proposed actions to minimize impacts to these sensitive environmental resource areas.

Approximately 83 percent of the WRP easements that would be crossed by the proposed Project are located in Madison Parish, Louisiana, which has a high relative density of these sites, rendering avoidance impractical. Additionally, Gulf South proposes a route through Madison Parish that avoids the Tensas River NWR, further limiting routing options that would avoid WRP easements. To ensure that impacts to WRP lands are minimized, we are recommending in Section 3.8.4 that Gulf South continue consultation with NRCS and file a NRCS-approved construction and operations plan prior to construction. Based on routing considerations, the ongoing consultation, and our recommendation, we believe that the proposed route would avoid WRP easements and impacts to crossed easements to the maximum extent practical.

The proposed Project would cross four areas enrolled in the State of Mississippi's Sixteenth Section Program, as discussed in Section 3.8.4. Gulf South indicated that it had reached agreement or closed easement agreements with all of the involved property owners. Gulf South proposes to cross a portion of one of the properties using HDD, thereby avoiding impacts to the ground surface. Other considerations that Gulf South used for routing included avoidance of residential properties, avoidance of the central portions of individual tracts, and collocation with existing rights-of-way. Given the landowner agreements and the

impact minimization measures adopted, we believe that the proposed route would avoid Sixteenth Section lands to the extent practical.

Based on our review of the proposed Project route, Gulf South's proposed measures, and our recommendations, we believe that the proposed route's impacts to sensitive environmental resources and special land uses would be adequately avoided or minimized.

Identified Route Variations

Based on our analysis of the proposed Project and comments provided by the public, we have identified and evaluated eight route variations. Table 4.4-2 lists these route variations, the segments of the proposed Project route that they would replace, and the reason for the proposed variation. Each route variation considered was compared to the corresponding segment of the proposed Project route to determine whether potential environmental benefits would be afforded. Our evaluation of route variations was based on information provided by Gulf South, comments filed with the FERC, review of available aerial photography and USGS topographic maps, and site visits performed by FERC staff.

TABLE 4.4-2
Summary of Route Variations Identified in Response to Public Comments Received for the Proposed East Texas to Mississippi Expansion Project

Route Variation	Proposed Route Mileposts (approximate)	Reason for Variation	Analysis in Section Noted
Garner 1	78.4 to 78.8	Avoid impacts to landowner	4.4.1
Garner 2	78.4 to 78.8	Avoid impacts to landowner	4.4.1
Hoychick	120.8 to 122.8	Avoid impacts to rice farming and hunting	4.4.2
Shelton	140.6 to 141.9	Avoid or minimize impacts to the Shelton property	4.4.3
Withrow/Broadbent	187.9 to 189.5	Avoid or minimize impacts to the Withrow/Broadbent property	4.4.4
Barton East	213.7 to 214.0	Avoid or minimize impacts to the Barton property	4.4.5
Pearl River	231.0 to 236.0	Avoid or minimize impacts to wetlands, black bear candidate denning trees, and a bird rookery	4.4.6
Pitre	192.7 to 193.8	Avoid or minimize impacts to the Pitre property	4.4.7

4.4.1 Garner Route Variations

The Garner Route Variations were developed in response to a landowner comment concerning Project effects to land use, specifically a loss of income from timber production. Both Garner Route Variations would diverge from the proposed Project route at MP 78.4 and rejoin the proposed Project route at approximately MP 78.8.

The Garner Route Variation 1 (Figure 4.4.1-1a) would parallel the north side of an existing transmission line right-of-way present on the Garner property, while the Garner Route Variation 2 (Figure 4.4.1-1b) would avoid the Garner property altogether by shifting the route north to an adjacent

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Figure 4.4.1-1a
Garner Route Variation 1

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Figure 4.4.1-1b
Garner Route Variation 2

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landowner's property. The Garner Route Variation 1 would be approximately the same total length as the proposed Project, while the Garner Route Variation 2 would require an additional 0.1 mile of pipeline length, resulting in an additional 1.3 acres of land temporarily impacted (Table 4.4.1-1). Lands impacted by both route variations and the proposed Project are comprised of forests and pine plantations. In addition to a similarity of land types crossed, both route variations would cross the same number of waterbodies as the originally proposed route and none of the options would affect wetlands. Unlike the proposed Project route, however, both route variations would result in two additional crossings of a high-voltage transmission line. Additionally, selection of the Garner Route Variation 2 would result in clearing of a new corridor in a forested area instead of collocation with the electric transmission line right-of-way or the Carthage to Perryville Project's pipeline right-of-way.

TABLE 4.4.1-1
Comparison of Garner Route Variations and the Original Route

Evaluation Criteria	Original Route	Garner Route Variation 1	Garner Route Variation 2
Total Length (miles)	0.4	0.4	0.5
Landowners Affected (number)	3	3	3
Construction Impacts (acres)	4.8	4.8	6.1
Permanent Impacts (acres)	2.9	2.9	3.6
Adjacent to Existing Rights-of-Way (miles)	0.4	0.4	0.0
Stream Crossings (number)	4	4	4
Wetland Impacts (acres)	0.0	0.0	0.0
Land Use Type	Forest, silviculture	Forest, silviculture	Forest, silviculture, other

Although the Garner Route Variations would alleviate concerns raised by the affected landowner by avoiding timber production on the Garner property, adoption of either route variation would result in two additional crossings of a high-voltage electric transmission line that would introduce constructability and worker safety concerns. Further, neither the Garner Route Variation 1 nor the Garner Route Variation 2 would result in additional environmental benefit. In addition to the lack of environmental benefit and the additional transmission line crossings, the Garner Route Variation 2 would result in transference of impacts to another landowner. For these reasons, we believe that adoption of either of the Garner Route Variations would not be preferable to the proposed route and have eliminated them from further consideration.

4.4.2 Hoychick Route Variation

The Hoychick Route Variation was developed in response to a landowner comment concerning potential impacts to rice farming and hunting activities. The Hoychick Route Variation would eliminate impacts to this property; diverging from the proposed Project route at MP 120.8, passing north of the Hoychick property, and then rejoining the proposed Project route at approximately MP 122.8 (see Figure 4.4.2-1).

The Hoychick Route Variation would be the same length as the proposed route, with identical land requirements and affecting the same number of landowners (Table 4.4.2-1). Both the route variation and the

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Figure 4.4.2-1
Hoychick Route Variation

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TABLE 4.4.2-1
Comparison of the Hoychick Route Variation and the Original Route

Evaluation Criteria	Original Route	Hoychick Route Variation
Total Length (miles)	2.0	2.0
Landowners Affected (number)	4	4
Construction Impacts (acres)	24.2	24.2
Permanent Impacts (acres)	14.5	14.5
Adjacent to Existing Rights-of-Way (miles)	2.0	0.0
Stream Crossings (number)	2	3
Wetland Impacts (acres)	0.0	0.0
Land Use Type	Agriculture, forest	Agriculture, forest

proposed Project route would cross agricultural and forestland. Neither the proposed route nor the route variation would cross any wetlands, but the route variation would require one more waterbody crossing than the proposed route. The route variation would also result in the alteration of the proposed Boeuf River crossing to a point approximately 1,000 feet north of its proposed location. The route variation would not be collocated with the Carthage to Perryville Project corridor. Consequently, Gulf South would not be able to use any of the CEGT's previously cleared construction right-of-way to minimize land impacts.

Although the Hoychick Route Variation would alleviate concerns raised by the landowner, by eliminating impacts to the Hoychick property, it would offer no significant environmental advantage over the proposed Project route and would result in an additional waterbody crossing. Additionally, the route variation would merely result in transference of impacts to other nearby landowners. For these reasons, we eliminated it from further consideration.

4.4.3 Shelton Route Variation

The Shelton Route Variation was developed in response to a landowner comment concerning potential impacts to livestock operations and property value. The Shelton Route Variation would move the proposed route north onto an adjacent property owner's land. The route variation would deviate from the proposed Project route at MP 140.6, west of the Shelton property, and proceed eastward before rejoining the proposed Project route at MP 141.9 (see Figure 4.4.3-1).

Relative to the proposed Project route, the Shelton Route Variation would be 0.1 mile longer in total pipeline length and would require an additional 1.2 acres for construction right-of-way land requirements (Table 4.4.3-1). Both the proposed Project route and the route variation would cross a mixture of croplands and forestland, and they both would cross identical amounts of wetlands. However, the Shelton Route Variation would cross one additional waterway and more forested land than the proposed Project route. Further, this route variation would not be adjacent to an existing right-of-way easement, and Gulf South would not be able to utilize any previously disturbed right-of-way for construction.

Although the Shelton Route Variation would alleviate concerns raised by the landowner, by eliminating impacts to the Shelton property, adoption of the route variation would merely result in transference

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Figure 4.4.3-1
Shelton Route Variation

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TABLE 4.4.3-1
Comparison of the Shelton Route Variation and the Original Route

Evaluation Criteria	Original Route	Shelton Route Variation
Total Length (miles)	1.3	1.4
Landowners Affected (number)	3	3
Construction Impacts (acres)	15.8	17.0
Permanent Impacts (acres)	9.5	10.2
Adjacent to Existing Rights-of-Way (miles)	1.3	0.0
Stream Crossings (number)	2	3
Wetland Impacts (acres)	1.7	1.7
Land Use Type	Agriculture and forest	Agriculture and forest

of impact to other nearby landowners. Adoption of the Shelton Route Variation also would not allow an existing right-of-way to be followed, resulting in impacts to previously undisturbed upland forestlands; and no environmental benefit would be gained. For these reasons, we believe that adoption of the Shelton Route Variation provides no environmental advantage and we eliminated it from further consideration.

4.4.4 Withrow/Broadbent Route Variation

The Withrow/Broadbent Route Variation was developed in response to landowner comments concerning potential impacts to wildlife habitats, topography, sensitive soil types, and planned developments, as well as safety concerns. The Withrow/Broadbent Route Variation would eliminate impacts to these properties. The Withrow/Broadbent Route Variation would diverge from the proposed Project route at MP 187.9, circumvent the Withrow/Broadbent Property to the north, and rejoin the proposed Project route at approximately MP 189.5 (see Figure 4.4.4-1).

The Withrow/Broadbent Route Variation would be 0.2 mile longer than the proposed Project route (Table 4.4.4-1). Both the variation and the proposed route would cross forested lands. Both the proposed Project alignment and the Withrow/Broadbent Route Variation contain rugged topography that would require similar workspace variances for safe construction. Therefore, adoption of the Withrow/Broadbent Route Variation would not eliminate the need for additional workspace. Due to the increased length of this variation, the construction right-of-way would require 2.4 acres of additional land. In addition to disturbing additional forested lands, the Withrow/Broadbent Route Variation would result in two additional stream crossings, would impact 0.2 acre of additional wetlands, and would not be adjacent to an existing powerline easement.

Although the Withrow/Broadbent Route Variation would alleviate concerns raised by the landowners, it would increase the total route length, which would result in an increased conversion of forested lands, an increased number of waterway crossings, and increased impacts to wetlands. Adoption of the Withrow/Broadbent Route Variation would not allow collocation with an existing right-of-way, thereby impacting previously undisturbed lands. For these reasons, we believe that adoption of the Withrow/Broadbent Route Variation provides no environmental advantage and we eliminated it from further consideration.

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Figure 4.4.4-1
Withrow/Broadbent Route Variation

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TABLE 4.4.4-1
Comparison of the Withrow/Broadbent Route Variation and the Original Route

Evaluation Criteria	Original Route	Withrow/Broadbent Route Variation
Total Length (miles)	1.6	1.8
Landowners Affected (number)	6	6
Construction Impacts (acres)	19.4	21.8
Permanent Impacts (acres)	11.6	13.1
Adjacent to Existing Rights-of-Way (miles)	1.6	0.0
Stream Crossings (number)	5	7
Wetland Impacts (acres)	0.3	0.5
Land Use Type	Forest	Forest

4.4.5 Barton Route Variation

The Barton Route Variation was developed in response to a landowner comment concerning potential impacts to the center of the property, thereby potentially reducing the value of the land and restricting future property development. The commenter suggested two possible alternatives, traversing around the property to the east and west, respectively, to minimize impacts. The commenter identified the eastern alternative as the preferred route. The Barton East Route Variation was developed in response to that comment. The Barton East Route Variation would diverge from the proposed Project route at MP 213.7, proceed east circumventing the Barton property, and then rejoin the proposed alignment at MP 214.0 (Figure 4.4.5-1). The route variation would minimize impacts to the center of the Barton property by shifting the route to the northern property boundary.

The Barton East Route Variation would increase the total pipeline length by 0.3 mile and would increase the construction and permanent right-of-way land requirements by approximately 3.6 acres and 2.2 acres, respectively (Table 4.4.5-1). Both the proposed Project and the route variation are similar in that neither would be adjacent to existing rights-of-way and they both would cross pasture and forested lands, although the route variation would cross relatively more forested lands. The Barton Route East Route Variation would result in one additional waterbody crossing and one additional landowner being affected.

Although the Barton East Route Variation would alleviate concerns raised by the landowner by eliminating impacts to the Barton property, it would increase temporary and permanent land requirements, require an additional waterbody crossing, and affect an additional landowner. Therefore, we believe that adoption of the Barton East Route Variation provides no environmental advantage and we eliminated it from further consideration.

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Figure 4.4.5-1
Barton Route Variation

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TABLE 4.4.5-1
Comparison of the Barton East Route Variation and the Original Route

Evaluation Criteria	Original Route	Barton East Route Variation
Total Length (miles)	0.8	1.1
Landowners Affected (number)	2	3
Construction Impacts (acres)	9.7	13.3
Permanent Impacts (acres)	5.8	8.0
Adjacent to Existing Rights-of-Way (miles)	0.0	0.0
Stream Crossings (number)	3	4
Wetland Impacts (acres)	0.0	0.0
Land Use Type	Pasture and forest	Pasture and forest

Gulf South has since indicated that right-of-way negotiations were settled with the landowner during the Draft EIS comment period. Given our analysis above, and the resolution of the landowner's concerns, we believe that the proposed route in this area is appropriate.

4.4.6 Pearl River Route Variation

The Pearl River Route Variation was developed based on consultation with the FWS regarding the proposed Project. The FWS identified a route variation for the proposed crossing of the Pearl River near MP 232.5 that it believed could minimize impacts to wetlands, Louisiana black bear candidate denning trees, and a bird rookery. Generally, this route variation would deviate to the north, crossing the Pearl River along an existing road near the Hinds County and Copiah County border, and then rejoin the proposed route east of the Pearl River (Figure 4.4.6-1).

The Pearl River Route Variation is virtually identical to proposed route in regard to total length and area affected by construction and operation (Table 4.4.6-1). Both the proposed Project and the route variation are similar in that neither would be adjacent to existing rights-of-way or located within 50 feet of residences. The proposed route would affect more waterbodies and forested area, but would impact less landowners and wetlands relative to the Pearl River Route Variation.

Given the relative similarity of the environmental impacts associated with the proposed Project and the Pearl River Route Variation, and additional consultations including a site visit with the FWS, we believe that adoption of the Pearl River Route Variation would not be preferable to the proposed route and we eliminated it from further consideration.

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Figure 4.4.6-1
Pearl River Route Variation

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TABLE 4.4.6-1
Comparison of the Pearl River Route Variation and the Original Route

Evaluation Criteria	Original Route	Pearl River Route Variation
Total Length (miles)	6.2	6.2
Landowners Affected (number)	19	24
Construction Impacts (acres)	50.6	49.6
Permanent Impacts (acres)	35.0	34.1
Adjacent to Existing Rights-of-Way (miles)	0.0	0.0
Stream Crossings (number)	8	6
Wetlands Crossed (number / miles)	2 / 1.7	4 / 1.9
Land Use Type	Mixed forest, pine forest, and forested wetland	Pasture, mixed forest, and forested wetland

4.4.7 Pitre Route Variation

The Pitre Route Variation was developed in response to a landowner comment concerning safety issues and the potential for soil erosion. The Pitre Route Variation would diverge from the proposed Project route between MP 192.7 and MP 193.8 (see Figure 4.4.7-1). The route variation would eliminate impacts to this landowner by shifting the corridor south around the Pitre property.

The Pitre Route Variation would increase the total pipeline length by 0.2 mile and increase the construction right-of-way land requirements by about 2.5 acres compared to the original route (Table 4.4.7-1). The Pitre Route Variation would shift the Project corridor from crossing forested and pasturelands to crossing forested lands, wetlands, and some residential areas. The number of waterbodies would not change with this route variation, but an additional 1.0 acre of wetlands would be disturbed. Additionally, this variation would not be collocated with an existing power line easement. Gulf South indicated that during right-of-way negotiations, it agreed to modify the proposed route to accommodate the landowner's request to avoid impacts to three large trees located on the subject property.

TABLE 4.4.7-1
Comparison of the Pitre Route Variation and the Original Route

Evaluation Criteria	Original Route	Pitre Route Variation
Total Length (miles)	1.1	1.3
Landowners Affected (number)	3	4
Construction Impacts (acres)	13.3	15.8
Permanent Impacts (acres)	8.0	9.5
Adjacent to Existing Rights-of-Way (miles)	1.1	0.0
Stream Crossings (number)	3	3
Wetlands Impacted (acres)	0.0	1.0
Land Use Type	Forest and pasture	Forested, wetlands, and residential

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Figure 4.4.7-1
Pitre Route Variation

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Although the Pitre Route Variation would alleviate concerns raised by the landowner, by eliminating impacts to the Pitre property, it would increase land disturbance and wetland impacts, and would not be collocated with existing rights-of-way. Further, this route variation would impact one more property owner than the original route, resulting in transference of alignment impacts to other and additional nearby landowners. For these reasons, we believe that adoption of the Pitre Route Variation would not be preferable to the proposed route and we eliminated it from further consideration.

4.5 ABOVEGROUND FACILITY ALTERNATIVES

We evaluated the proposed locations of the new aboveground facilities to determine whether environmental impacts would be reduced or mitigated by use of alternative facility sites. Our evaluation involved inspection of aerial photography and mapping, as well as site visits along the proposed Project corridor. The aboveground facilities for the proposed Project include two new compressor stations and the addition of new compression at one existing station, six M/R stations, 11 MLVs, nine side valves, and five pig launcher and/or receiver stations. All of the pig launcher/receiver facilities would be located within the confines of the proposed compressor stations and/or M/R station sites, so we did not consider alternatives for those facilities.

Because the location of the M/R stations would be linked to the location of the associated natural gas receipt and interconnect points, the search for alternatives was constrained to sites located adjacent to the intersection of the proposed Project route and the planned and existing pipeline facility locations. Similarly, the locations of MLVs would be linked to the location of the proposed Project pipeline. Further, the proposed locations of MLVs along the proposed Project route were largely determined based on DOT safety regulations that specify the maximum distance between sectionalizing block valves and also require that these facilities be located in readily accessible areas. We did not identify any alternative sites for the proposed M/R stations or MLV facilities that would offer a significant environmental advantage to the proposed sites for these facilities.

As with the other proposed aboveground facilities, the compressor station locations would be constrained to sites near the proposed pipeline route. Specifically, the proposed compressor station sites along the proposed pipeline route were largely dictated based on engineering and economic design standards. Gulf South indicated that its existing Carthage Junction Compressor Station, located in Panola County, Texas, provided the optimal location for initial compression for the proposed Project, and use of this existing facility would avoid disturbance and impacts to greenfield areas. The proposed Vixen Compressor Station would be located at MP 99.4 in Ouachita Parish, Louisiana, and the proposed Tallulah Compressor Station would be located at MP 167.6 in Madison Parish, Louisiana. As described in Section 3.8, construction and operation of the Vixen and Tallulah Compressor Stations would result in a permanent conversion of approximately 6.0 acres of pine plantation and 10.0 acres of agricultural land, respectively. However, no wetlands or other environmentally sensitive features would be affected at either of these proposed compressor station locations, and we have determined that operation of these facilities would not result in significant air quality degradation or noise impacts to any nearby residents, given measures proposed by Gulf South and our recommendations (see Section 3.11).

During the scoping period for the proposed Project, we received a comment requesting consideration of an alternative to the Tallulah Compressor Station site. We evaluated site alternatives for both of the new compressor facilities associated with the proposed Project.

4.5.1 Vixen Compressor Station Site Alternatives

We looked at three alternative sites for the Vixen Compressor Station. Each of these three alternative sites, as well as the proposed site, are located on each quadrant of the intersection of the proposed Project and Gulf South's existing 30-inch-diameter Index 330 pipeline (Figure 4.5.1-1). In addition to being proximate to

existing Gulf South facilities, this intersection meets the necessary engineering and hydraulic requirements for an intermediate location for compression. Each of the four potential sites currently contain planted pines, but variations in the area's topography and the presence of wetlands, access roads, and abandoned railroad crossings rendered each of the alternative sites less preferable than the proposed site. The proposed Vixen Compressor Station site location on the southwestern quadrant was selected by Gulf South due to the lack of sensitive environmental resources present and because of the presence of an existing access road, which would minimize land disturbance.

Our environmental review did not identify any significant environmental consequences for the proposed Vixen Compressor Station site in relation to the alternative sites. Therefore, we believe that adoption of any of the three alternative sites for the Vixen Compressor Station would not be preferable to the proposed location.

4.5.2 Tallulah Compressor Station Site Alternatives

We evaluated one alternative site (MP 172.1; Figure 4.5.2-1) for the Tallulah Compressor Station in addition to the proposed site at MP 167.6. One commentor indicated concern regarding the proposed location of the Tallulah Compressor Station, which would be adjacent to his home and property. Specifically, the commentor was concerned about potential visual and noise impacts to his property. Issues associated with visual and noise impacts are discussed in detail in Sections 3.8.6 and 3.11.2, respectively. Both sites would be located on agricultural lands and neither would contain wetlands, waterbodies, or other significant environmental resources. However, several residences are located within 0.25 mile of the alternative site, which would also require crossing agricultural operations to construct an access road. The proximity of these residences to the alternate site could result in the potential occurrence of visual and noise impacts. Additionally, the alternative site would be visually screened by existing trees on only one side. The proposed site is located at least 0.5 mile from the nearest residence and would be visually screened on three sides by trees, thereby reducing the potential for visual and noise impacts. We evaluated the potential for noise impacts associated with the proposed Tallulah Compressor Station, as discussed in Section 3.11.2 and concluded that there would not be a significant impact on the noise environment. We recommended additional noise surveys and if necessary, noise controls, to ensure that adverse impacts would not occur.

Based on a comment provided by the NRCS, we also evaluated whether or not it could be feasible for the Tallulah Compressor Station to be sited in an area where prime farmland could be avoided. Virtually the entire length of the proposed pipeline route in Madison Parish, Louisiana (approximately 97 percent) where the Tallulah Compressor Station would be located, crosses prime farmland. Both the proposed and alternate evaluated sites for the Tallulah Compressor Station would be located on prime farmland. Although a few areas in Madison Parish that would be crossed by the proposed pipeline were not designated as prime farmland, each of these areas contained soils described as "frequently flooded" by the soil survey data, rendering them unsuitable for construction of a compressor station. Given the prevalence of prime farmland in Madison Parish, the unsuitability of the few available non-prime farmland areas, and engineering and hydraulic constraints associated with the positioning of compressor stations, it does not appear feasible that the compressor station could be moved to an area where prime farmland would not be affected.

Construction at either the proposed site or the alternative site for the proposed Tallulah Compressor Station would not result in significant environmental impacts, but the proposed site would be better visually screened and is located farther away from residences than the alternative site. For these reasons, we believe that the alternative site for the proposed Tallulah Compressor Station provides no environmental advantage and we eliminated it from further consideration.

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Figure 4.5.1-1
Vixen Compressor Station Site Alternative

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Figure 4.5.2-1
Tallulah Compressor Station Site Alternative

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