

2.0 DESCRIPTION OF PROPOSED ACTION

The Elba III Project consists of two main components: (a) Southern LNG proposes to expand the existing LNG import facility located on Elba Island in Chatham County near Savannah, Georgia, and (b) EEC proposes to construct approximately 188 miles on new 36- and 42-inch-diameter natural gas pipeline and appurtenant facilities between a point near the existing LNG facility and major pipeline interconnects in Georgia and South Carolina. Figure 2.0-1 shows the general location of the Terminal Expansion facilities and the Elba Express Pipeline. Figure 2.0-2 shows the LNG transit route to territorial seas. Figure 2.0-3 shows the details of the proposed expansion facilities. Detailed maps of the pipeline system are provided in appendix B.

2.1 EXISTING FACILITIES

2.1.1 Terminal Expansion

The existing Terminal and slip encompasses 224.47 acres of the 840-acre Elba Island, and are located on the south side of the shipping channel into the Port of Savannah. Southern LNG owns the entire island in fee. The existing site includes the following facilities:

- an LNG unloading slip with two berths. The South Dock has four unloading arms (three for liquid, one for vapor return) while the North Dock has two liquid arms and one vapor arm. Both berths have mooring and breasting dolphins, a fendering system, and interconnecting trestles;
- a dock on the Savannah River maintained for unloading LNG vessels under emergency conditions;
- three LNG storage tanks, each with a volume of 400,000 bbls (about 65,000 m³). The tanks are approximately 166 feet in diameter and 168 feet high, surrounded by earthen bermed secondary containment dikes capable of containing in excess of 105 percent of the tanks' contents;
- one LNG storage tank with a gross volume of 1,000,000 bbls (about 160,000 m³). This tank is 258 feet in diameter and 183 feet high, surrounded by an earthen bermed secondary containment dikes capable of containing 110 percent of the tank's contents;
- LNG send-out facilities, including pumps and vaporizers; boil-off compressors, recondensers, and desuperheaters;
- a motor control center;
- associated hazard detection, control, and prevention systems, cryogenic piping and insulation, electrical and instrumentation systems; and
- a firewater system sourced from a freshwater pond and river water.

Non-Internet Public

DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED ELBA III PROJECT

Docket Nos. CP06-470-000, CP06-471-000, CP06-472-000,
CP06-473-000, and CP06-474-000

Page 2-2
Figure 2.0-1
Project Overview

Public access for the above information is available only
through the Public Reference Room, or by e-mail at
public.referenceroom@ferc.gov.

Non-Internet Public

DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED ELBA III PROJECT

Docket Nos. CP06-470-000, CP06-471-000, CP06-472-000,
CP06-473-000, and CP06-474-000

Page 2-3

Figure 2.0-2

LNG Transit Route to Territorial Seas

Public access for the above information is available only
through the Public Reference Room, or by e-mail at
public.referenceroom@ferc.gov.

Non-Internet Public

DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED ELBA III PROJECT

Docket Nos. CP06-470-000, CP06-471-000, CP06-472-000,
CP06-473-000, and CP06-474-000

Page 2-4

Figure 2.0-3

Existing and Proposed Expansion Terminal Facilities

Public access for the above information is available only
through the Public Reference Room, or by e-mail at
public.referenceroom@ferc.gov.

2.1.2 Elba Express Pipeline

In the Project vicinity, Southern currently owns and operates twin 30-inch-diameter pipelines which extend about 13 miles between the Terminal and its Port Wentworth Meter Station, crossing the Savannah River, in Chatham County, Georgia. As part of its South Main System, Southern also owns and operates two existing 14- to 16-inch-diameter and one 20-inch diameter pipeline that extends (a portion or all of the distance) along the route of the Elba Express Pipeline from the Port Wentworth Meter Station (MP 0.0 on the Elba Express route) in Chatham County, Georgia, to the Wrens Compressor Station (MP 104.8 on the Elba Express route) in Jefferson County, Georgia.

2.2 PROPOSED FACILITIES

2.2.1 Terminal Expansion

The Terminal Expansion facilities would be located within the existing 224.47-acre import terminal site. The proposed Project would add 8.4 Bcfe to the existing facility, bringing the total storage capacity to 15.7 Bcfe and increasing the send-out capacity by an addition 0.9 Bcfd to 2.1 Bcfd.

Southern LNG proposes to construct the Terminal Expansion facilities in two phases. Phase A would involve construction of a new 200,000 m³ LNG storage tank with a storage capacity of 4.2 Bcfe of LNG; one associated boil-off gas condenser; three boil-off gas compressors; three submerged combustion vaporizers, each with peak capacity of 180 MMcfd; and modifications to the marine berthing slip and unloading docks to accommodate new, larger LNG ships and to facilitate simultaneous unloading of two LNG tankers. Phase B would involve construction of an additional 200,000 m³ LNG storage tank with a storage capacity of 4.2 Bcfe of LNG, and three additional submerged combustion vaporizers (two duty, plus one spare), each with a peak capacity of 180 MMcfd. Phase A would be completed as early as January 2010 and Phase B would be completed no later than December 2012.

LNG Storage Tanks

Southern LNG proposes to increase the LNG storage capacity by the addition of two 200,000 m³, single containment, double-wall metal tanks. The tanks would be constructed of a 9 percent nickel steel inner tank, a carbon steel outer tank, and an aluminum suspended insulation support deck. The LNG would be contained within the inner tank, while the outer tank would contain product vapors. The storage tanks would be surrounded by mechanically-stabilized earth (MSE) dikes, which would provide secondary containment. The steel inner and outer tanks would be supported on a common foundation.

LNG Vaporization and Send-out

In association with the additional LNG storage, Southern LNG would install facilities to vaporize and handle the LNG and associated boil-off gas, and allow for the send-out of the vaporized LNG. Proposed LNG vaporization and send-out facilities include:

- four booster pumps;
- a recondenser;
- six secondary pumps;
- six submerged combustion vaporizers (five operating and one spare);
- three electric motor driven, intermediate-pressure, two-stage reciprocating compressors;
- gas metering system; and
- other related facilities and buildings.

LNG Unloading Dock

Southern LNG proposes to modify the slip and mooring arrangements to accommodate LNG carriers having capacity of up to approximately 266,000 m³ and the following specifications:

- length overall of approximately 1,132 feet (345 meters);
- breadth or beam of approximately 180 feet (55 meters);
- design laden draft of approximately 39.4 feet (12.0 meters); and
- displacement of approximately 177,000 metric tons.

The proposed slip modification for new LNG carriers consists of adding four mooring dolphins (two for each berth), dredging (by hydraulic suction cutter dredge) approximately 72,000 cubic yards of material from the slope at the back of the slip (to be placed into the existing confined disposal facility [CDF] on the north end of the island, adjacent to the Terminal), and installing a sheet pile bulkhead at the back of the slip. Other modifications would involve reconfiguring the ship unloading systems to allow simultaneous unloading of two ships.

Ship Unloading Systems

The existing ship unloading systems at the North Dock would be upgraded to facilitate simultaneous unloading of two tankers. One of the existing 16-inch-diameter unloading arms would be relocated from the existing River Dock to the North Dock and added to the three existing arms. The unloading arms are designed for a wind load of 150 miles per hour (mph) when they are in their storage position. The maximum wind speed during unloading operations is limited to 45 mph.

Power Generation

Existing Terminal operations are supported by electrical power from an existing Savannah Electric and Power Company (SEPCO) substation on the west side of the Terminal. SEPCO would need to install more transformer capacity at this substation for the Terminal Expansion process equipment.

Associated Infrastructure

The proposed expansion facilities would require the construction of gravel access ramps and roads. The new roads and ramps would be constructed in accordance with the road construction standards that were utilized in the construction of the existing facility. Additional fences and gates would be constructed to provide a secure installation of the proposed facilities. All activities would be confined to the existing Terminal site.

2.2.2 Elba Express Pipeline

EEC proposes to construct the new approximately 188-mile-long natural gas pipeline originating at an interconnection at the end of the existing Southern twin 30-inch system in Chatham County, Georgia, and terminating at interconnections with the Transco Pipeline System on the east and west sides of the Savannah River in Hart County, Georgia, and in Anderson County, South Carolina.

EEC also proposes to construct the pipeline in two phases. Phase A would involve construction of two pipeline segments (the Northern and Southern Segments). The Southern Segment would consist of 104.8 miles of 42-inch-diameter pipeline extending between Port Wentworth and Southern's Wrens Compressor Station (MP 0 to MP 104.8). The Northern Segment would be 42 inches in diameter for the first 10 miles north of the Wrens Compressor Station (MP 104.8 to MP 114.8), and 36 inches in diameter for the final 73.1 miles (MP 114.8 to MP 187.9) to the Transco interconnection in Anderson County, South Carolina. The Elba Express Compressor Station would be constructed during Phase B. EEC plans to place Phase A into service by July 1, 2011, and Phase B by January 1, 2013.

The proposed pipeline would be constructed adjacent to an existing Southern pipeline for about 106.1 miles, or about 56 percent of the total length of 187.9 miles.

In order to integrate deliveries of vaporized LNG into its system, Transco would construct a mainline static mixing facility on a parcel of land approximately 200 feet wide by 600 feet long adjacent to its system and the facilities proposed for construction by EEC at MP 187.9 (the Transco Zone 5 and Plant Rainey Meter Stations). This facility would consist of a long, large-diameter (buried) header pipe and a series of aboveground valves to interconnect Transco's four mainline pipelines and the delivery pipeline from EEC's Transco Zone 5 Meter Station to the header pipe. Although this facility would be constructed by Transco, we have included it in the scope of facilities covered by our analysis.

Aboveground Facilities

The Elba Express Pipeline would include aboveground facilities consisting of the Elba Express Compressor Station, eleven MLVs, eight meter stations (three to connect to existing gas-fired electric power plants, two to connect to Southern's pipeline system, two to connect to Transco's system, and one to connect to the Cypress Pipeline System), and two sets of pig launchers and

receivers. The locations of the aboveground pipeline facilities are identified in table 2.2-2 and depicted on maps provided in appendix B.

TABLE 2.2-2		
Aboveground Pipeline Facilities		
Facility Name	County/State	MP
Port Wentworth 42-inch Pig Launcher	Chatham/GA	0.0
Port Wentworth Meter Station	Chatham/GA	0.0
McIntosh Meter Station	Effingham/GA	9.7
EEC/Cypress Meter Station	Effingham/GA	9.7
MLV-001	Effingham/GA	9.7
Effingham Meter Station	Effingham/GA	10.3
MLV-002	Effingham/GA	18.3
MLV-003	Screven/GA	36.5
MLV-004	Screven/GA	53.3
Elba Express Compressor Station	Jenkins/GA	58.3
MLV-005	Burke/GA	72.0
MLV-006	Burke/GA	89.4
Wrens Meter Station	Jefferson/GA	104.8
MLV-007	Jefferson/GA	104.8
Hwy 17 Gate 42-inch Pig Receiver	Warren/GA	114.8
Hwy 17 Gate 36-inch Pig Launcher	Warren/GA	114.8
MLV-008	McDuffie/GA	124.6
MLV-009	Wilkes/GA	143.9
MLV-010	Elbert/GA	163.9
MLV-011	Hart/GA	183.4
Transco Zone 4 Meter Station	Hart/GA	187.1
Transco Mixing Station	Anderson/SC	187.9
Plant Rainey Meter Station	Anderson/SC	187.9
Transco Zone 5 Meter Station	Anderson/SC	187.9
Transco Zone 5 36-inch Pig Receiver	Anderson/SC	187.9

The Elba Express Compressor Station, meter stations, and Highway 17 Gate pig launcher and receiver would be located outside the permanent right-of-way (ROW) of other pipeline and aboveground facilities, whereas the MLVs and other pig launcher and receiver would be located within the permanent ROW for the pipeline or meter station facilities.

2.3 LAND REQUIREMENTS

A total of approximately 3,296.51 acres of land and open water could be required for construction of the Project. Operation of the Terminal Expansion would permanently impact 34.26 acres of land. Operation of the pipeline would require approximately 960.56 acres. The aboveground facilities (listed in table 2.2-2) would require 32.00 acres for operation. Land requirements for the Project are summarized in table 2.3-1.

TABLE 2.3-1 Land Requirements for the Elba III Project		
Facility	Land Affected During Construction (acres) <u>a/</u>	Land Affected During Operation (acres)
Terminal Expansion Facilities	213.08	34.26
Pipeline (Mainline)	2,747.94	960.56
Storage Yards/Warehouses	295.92	0
Elba Express Compressor Station	25.04	25.04
Port Wentworth Meter Station	0.38	0.30
McIntosh Meter Station	1.28	1.28
EEC/Cypress Meter Station	Included in McIntosh Meter Station	Included in McIntosh Meter Station
Effingham Meter Station	3.03	0.53
Wrens Meter Station	0.37	0.21
Transco Zone 4 Meter Station	1.34	0.59
Transco Mixing Station	2.7	2.7
Plant Rainey Meter Station	2.97	0.50
Transco Zone 5 Meter Station	0.80	0.80
MLV-001 through MLV-011 <u>b/</u>	N/A	N/A
Port Wentworth 42-inch Pig Launcher <u>c/</u>	N/A	N/A
Hwy 17 Gate 42-inch Pig Receiver	1.61	1.61
Hwy 17 Gate 36-inch Pig Launcher	1.61	1.61
Transco Zone 5 Pig Receiver <u>c/</u>	N/A	N/A
Total	3,296.51	1028.43

a/ Extra workspace within the construction ROW is included in pipeline land requirements.
b/ Occurs within ROW or other facility limits.
c/ Occurs within meter station limits.

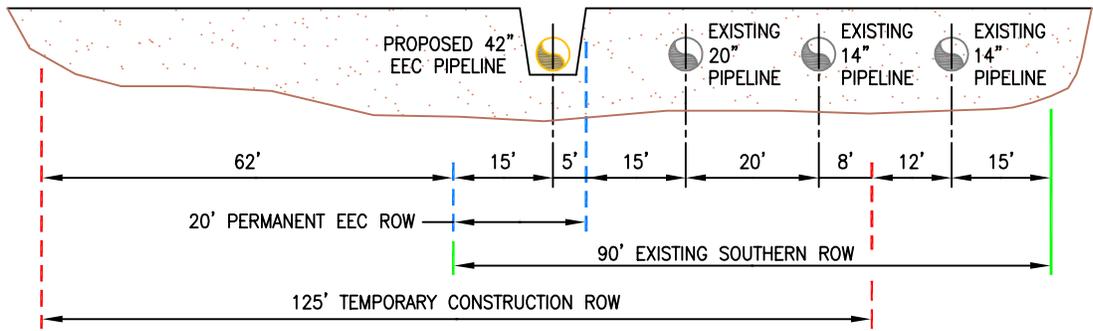
2.3.1 Terminal Expansion

Construction of the proposed Terminal Expansion facilities would require 213.08 acres. Following construction, 34.26 acres would be required for operation of the new facilities. All of the land that would be affected by construction and operation is currently within the limits of the existing 224.47-acre Terminal, which is located on the 840-acre Elba Island which Southern LNG owns in fee.

2.3.2 Elba Express Pipeline

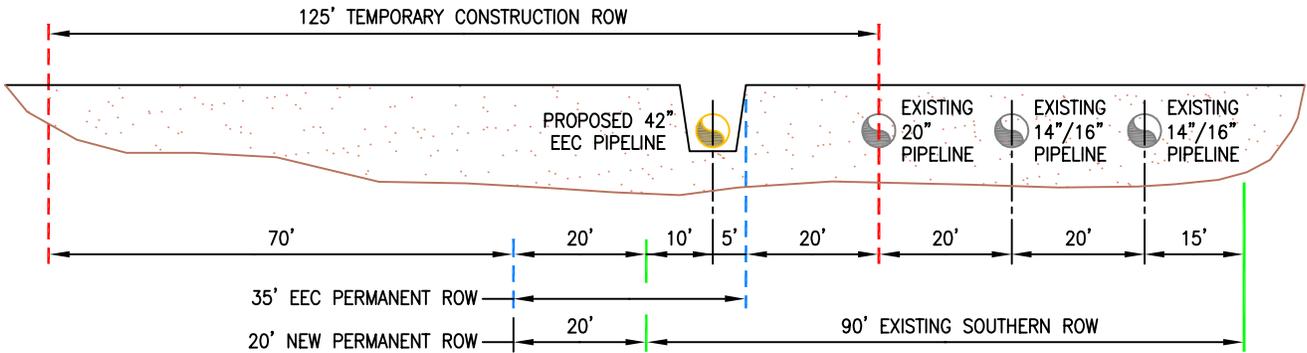
Construction of both proposed pipeline segments would affect a total of approximately 2,747.94 acres of land. Each segment would have a different construction configuration. Figures 2.2-1 and 2.2-2 illustrate the typical proposed construction ROW cross sections.

42" ELBA EXPRESS PIPELINE -- MP 0.0 - 9.7

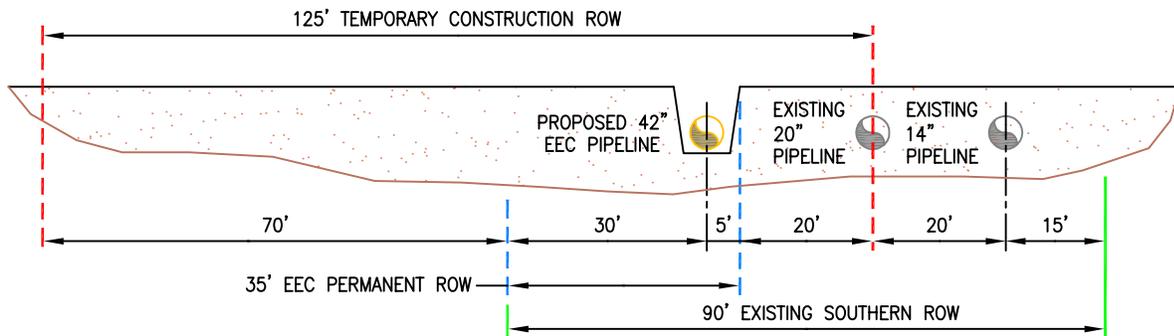


42" ELBA EXPRESS PIPELINE -- MP 9.7 - 27.0 & MP 89.0 - 106.1

MP 9.7 - 27.0 & MP 89.0 - 104.8 ADJACENT TO EXISTING 14" PIPELINES, MP 104.8 - 106.1 ADJACENT TO EXISTING 16" PIPELINES



42" ELBA EXPRESS PIPELINE -- MP 27.0 - 89.0

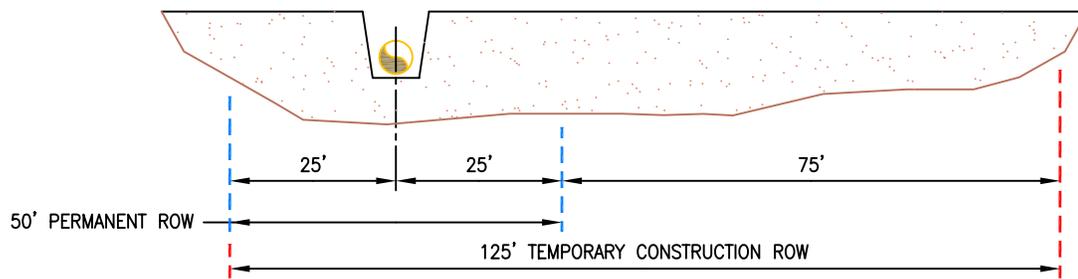


ELBA III PROJECT

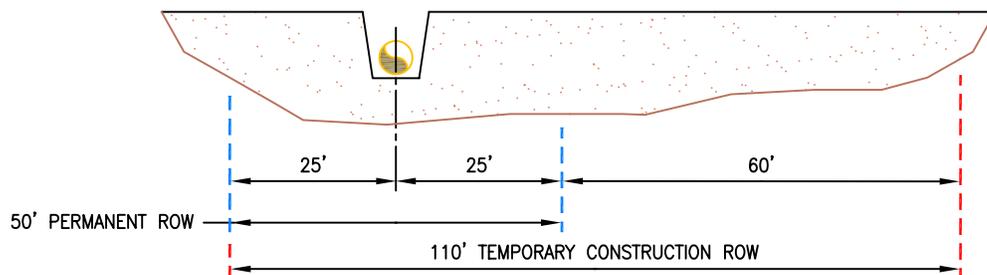
Figure 2.2-1

**Typical ROW Cross Sections
Adjacent To Existing Pipelines**

42" ELBA EXPRESS PIPELINE -- MP 106.1 - 114.8



36" ELBA EXPRESS PIPELINE -- MP 114.8 - 187.9



FILE: T:\E_CAD\50921\ELBA EXPRESS ROW-2A.dwg

ELBA III PROJECT

Figure 2.2-2
Typical ROW Cross Sections

2.3.2.1 ROW and Temporary Workspaces

Southern Segment – 42 inch

EEC proposes to use a 125-foot-wide construction ROW for the 42-inch-diameter Southern Segment. Exception would be made in specific areas where necessary, resulting in a narrower construction corridor in those areas. This construction ROW would include an overlap of Southern's existing ROW, which would vary based upon the existing ROW configuration (see table 4.8-2 and figure 2.2-1). Additional temporary construction and permanent ROW would be located on the western/southern side of the existing ROW. Additional site-specific areas would be required for extra workspace at road and railroad crossings, stream crossings, and at other areas to provide extra space for spoil storage and associated construction activities. Because of the width of Southern's existing ROW between MPs 0-104.8, the entire Southern Segment would be located within Southern's existing permanent easement. Further, EEC would require 20 feet of new permanent ROW (for inspection and maintenance purposes) for less than 35 miles along the Southern Segment once construction is completed (see figure 2.2-1).

Northern Segment – 42 inch

EEC proposes to use a 125-foot-wide construction ROW for the 42-inch-diameter portion of the Northern Segment. The first 1.3 miles of the Northern Segment (MP 104.8 to MP 106.1) would be collocated with Southern's existing pipeline ROW. Additional temporary construction and permanent ROW would be located on the southern side of the existing ROW. EEC would retain 20 feet of new permanent easement in addition to the existing 90 feet of permanent easement currently held by Southern along this short segment. The resulting permanent easement of 110 feet would be sufficient to maintain both the existing pipelines and the new Elba Express Pipeline. The remaining 8.7 miles (MP 106.1 to MP 114.8) of 42-inch-diameter pipeline would be greenfield construction (*i.e.*, follows no established corridor). In this interval, EEC would permanently retain 50 feet of the 110-foot-wide construction ROW to maintain the new Elba Express Pipeline.

Northern Segment – 36 inch

EEC proposes to use a 110-foot-wide construction ROW for the 36-inch-diameter portion of the Northern Segment (MP 114.8 to MP 187.9). EEC would permanently retain 50 feet of the 110-foot-wide construction corridor to maintain the new Elba Express Pipeline once construction is completed (See figure 2.2-2).

Additional Temporary Workspace

EEC has identified 247.1 acres of additional temporary workspace (ATW) that would be required at the following locations:

- for mobilization and demobilization areas at each end of each construction spread;
- for pipe stringing truck turnaround areas;

- where the pipeline crosses under buried features such as foreign pipelines, utility lines, drain tiles, irrigation system, *etc.*;
- where spread “move-arounds” and “turnarounds” are required;
- on both sides of roads, railroads, and waterbodies;
- where the push/pull construction technique may be used to cross wetlands;
- at side slope areas to allow for grading to level the working ROW;
- at areas where full ROW topsoil segregation may be required; and
- at other areas as determined by site-specific conditions where extra space for spoil storage and construction activities is required.

These ATW land requirements are included in the pipeline (mainline) category presented in table 2.3-1.

2.3.2.2 Access Roads

EEC proposes to use 96 roads, totaling approximately 54.1 miles, to provide access to the construction ROW for construction materials and equipment. Some permanent roads would be constructed to provide access to aboveground facilities. The access roads are shown on the maps in appendix B and listed in appendix C.

2.3.2.3 Warehouse/Storage Yards

EEC has identified 16 sites, ranging in size from approximately 0.90 acre to 57.13 acres, for temporary use as pipe storage yards, staging areas, and contractor or warehouses sites. The size and current land use of these sites are listed in table 4.8.2. The warehouse/storage yards are shown on the maps in appendix B.

2.3.2.4 Aboveground Facilities

Table 2.3-1 identifies the land requirements for the aboveground facilities.

2.4 CONSTRUCTION SCHEDULE

Southern LNG proposes to construct the Terminal Expansion facilities in two phases over an approximate 36 month period. Phase A would begin construction in 2007 to meet an in-service date in 2010. Phase B would start construction in 2009 to be in-service no later than December 2012.

EEC proposes to construct Phase A of the pipeline no later than mid 2009 for an in-service as early as January 2010. Construction for Phase B of the pipeline would begin mid 2012 for an in-service date no later than December 2012.

2.5 ENVIRONMENTAL COMPLIANCE

Under the NGA, the FERC may impose conditions on any Certificate it grants for the Project. These conditions include additional requirements and mitigation measures recommended in this

EIS to minimize the environmental impact that would result from the construction and operation of the project (see sections 4.0 and 5.0). We will recommend these additional requirements and mitigation measures (bold type in the text) be included as specific conditions to any approving Certificate issued for the Project. We will also recommend that EEC and Southern LNG be required to implement the mitigation measures that it has proposed as part of the project unless specifically modified by other Certificate conditions (see recommendation 1 in section 5.5).

EEC stated that it would ensure that all environmental conditions and requirements of the FERC Certificate and associated construction permits are incorporated in construction documents. EEC would employ two environmental inspectors (EI) per spread, although the number of inspectors may increase or decrease due to construction levels. The EIs would likely be hired from a qualified third-party contractor. The responsibilities of the EIs are outlined in EEC's project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) (see appendix E) and would include ensuring that the Certificate and environmental conditions attached to other permits and authorizations are met. During the construction phase, EEC's EIs would inspect all construction and mitigation activities to ensure compliance with the requirements of environmental plans, permits, and conditions. EIs may also oversee cultural resource monitors and/or biological monitors that may be required to monitor and evaluate construction impacts on resources as specified in this EIS.

Inspectors from the FERC would also conduct field inspections during construction. Other federal and state agencies may also conduct oversight of inspection to the extent determined necessary by the individual agency. After construction is completed, the FERC would continue to conduct oversight inspection and monitoring.

Compliance Monitoring

EEC has agreed to use an environmental compliance monitoring program involving a third-party contractor under the direction of the FERC staff. We believe that a third-party Environmental Compliance Monitoring and Reporting Program (ECMR Program) provides a number of benefits, both to agencies themselves and to applicants. The overall objective of the ECMR Program is threefold:

- to assess environmental compliance during construction in order to achieve a high level of environmental compliance throughout the project;
- to assist the FERC staff in screening and processing variance requests during construction; and
- to create and maintain a database of daily reports documenting compliance and instances of non-compliance.

The purpose of the EIs would be to help ensure environmental compliance on behalf of EEC. In contrast, the purpose of the ECMR monitors would be to monitor the activities of EEC's EIs and construction contractor on behalf of the FERC, to provide continuous feedback on compliance issues to the FERC staff, and to track and document progress of construction by the preparation and submittal of reports to the FERC on a regular and timely basis.

2.6 CONSTRUCTION PROCEDURES

Southern LNG would construct the Terminal Expansion facilities in accordance with their Upland Erosion Control, Revegetation and Maintenance Plan (Southern LNG's Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Southern LNG's Procedures) which are both unmodified from the FERC Plan and FERC Procedures.¹³ In addition, Southern LNG and EEC have developed a project-wide Spill Plan, Waste Plan and Container Management Policy (project-wide Spill Plan). We have reviewed these plans and found them acceptable (see appendix D).

2.6.1 Terminal Expansion

Phase A and Phase B

Both Phase A and Phase B of the Terminal Expansion facility would include installation of an LNG storage tank and various associated facilities (*e.g.*, submerged combustion vaporizers) per the construction procedures identified below.

LNG Storage Tanks

The most time consuming activity would be the construction of the LNG storage tanks. The construction sequence for each construction phase would follow a similar sequence:

- grade tank areas;
- drive piles;
- construct pile cap;
- pour concrete;
- install outer tank and inner annular footer plates;
- construct inner and outer tank shell rings;
- construct the tank roof;
- install roof platforms, walkways, and external tank piping;
- test tank hydro-pneumatically;
- install compaction control blanket, perlite insulation, and fiberglass blanket;
- install process piping from tank top to grade; and
- purge and cool-down tank.

The new LNG storage inner tanks would be hydrostatically tested in accordance with API 620 and the hydrostatic testing plan more fully described in section 4.3.3.

Associated LNG Facilities

Construction of the Terminal Expansion buildings, installation of major mechanical equipment, process and utility piping, and electrical and instrument facilities would occur once LNG storage

¹³ The FERC staff's Plan and Procedures are available on the FERC Internet Website at www.ferc.gov/industries/gas/enviro/guidelines.asp.

tank construction is well underway. These facilities would be completed and commissioned in advance of the tanks being ready for cool-down. The construction process would consist of the following steps:

- construction of foundations for buildings, major equipment, and pipe racks;
- building construction;
- major equipment, including vaporizers, compressors, heat exchangers, and pumps delivered to the site and set on their foundations;
- installation of piping would commence as soon as the majority of mechanical equipment is received; and
- installation of electrical and instrumentation systems.

Final grading and landscaping would be done in a fashion consistent with the procedures used for the existing plant, in particular the most recent expansion. All fill required for work in the LNG tank and process areas would be imported from off-site sources. Disturbed ground would be fine graded to the proper elevations required to ensure adequate drainage. Areas of the existing Terminal site disturbed by construction of the proposed expansion facilities would be stabilized with temporary erosion controls until construction is complete. Unless covered by new facilities, disturbed areas would be reseeded to establish a grass cover equivalent to preconstruction conditions and in compliance with Southern LNG's Plan.

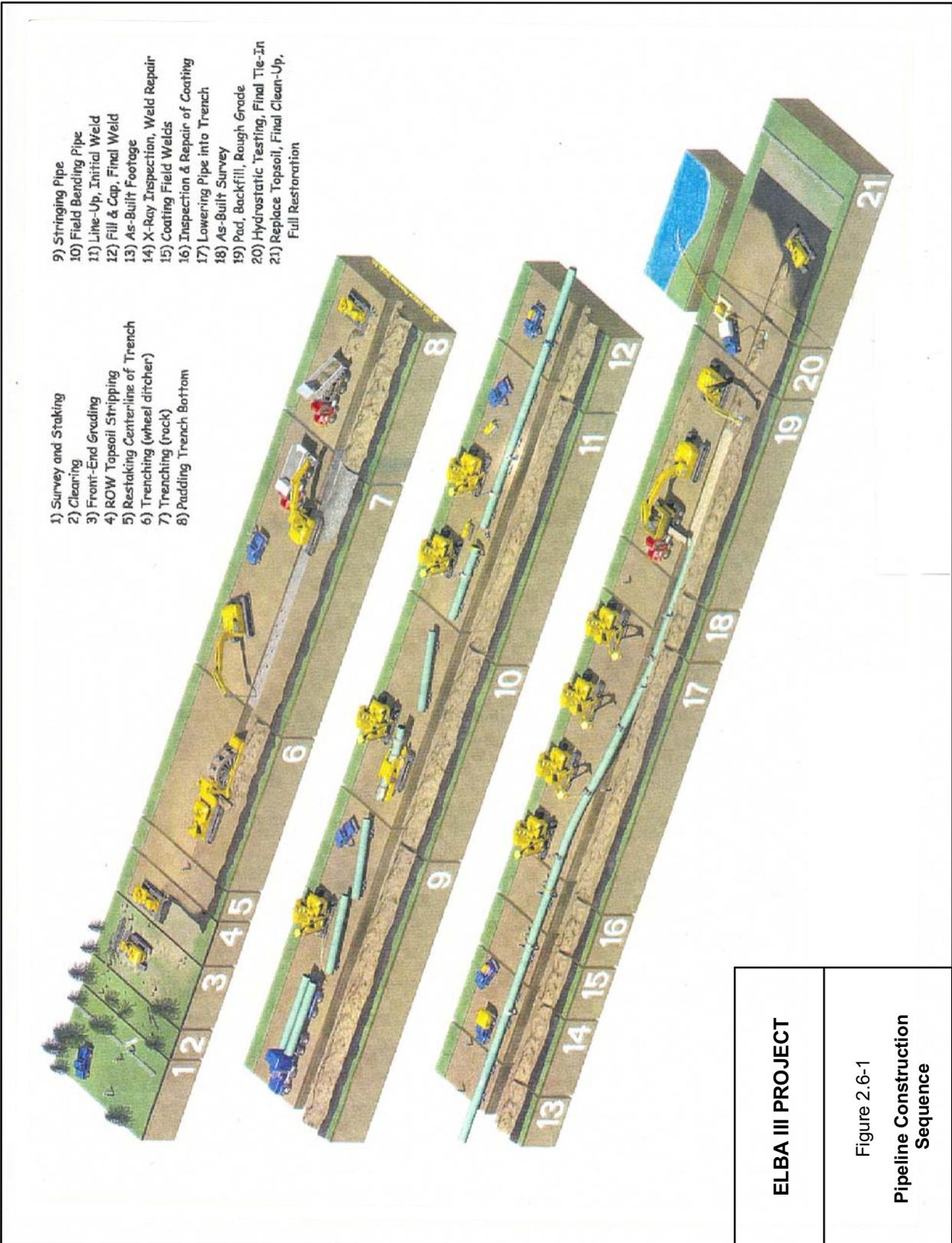
2.6.2 Elba Express Pipeline

Phase A

Phase A of the Elba Express Pipeline would include construction of all pipeline and associated aboveground facilities, with the exception of the Elba Express Compressor Station, per the construction procedures identified below.

EEC has developed a project-specific Upland Erosion Control, Revegetation and Maintenance Plan (EEC's Plan) and Wetland and Waterbody Construction and Mitigation Procedures (EEC's Procedures) which are similar (but not identical) to the FERC Plan and FERC Procedures. In addition, EEC has developed a project-wide Spill Plan Southern LNG (appendix D).

An illustration of typical a pipeline construction sequence is provided in figure 2.6-1. Preparation of the pipeline for construction would begin with the marking or staking of the construction ROW. Upon completing the marking of the ROW, the sequence of operations would be as follows: clearing, fencing, grading, trenching, pipe laying, stringing, bending, welding, coating, lowering-in, backfilling, testing (hydrostatic) and cleanup and restoration. Special construction techniques may be required for agricultural areas with irrigated crops, drain tiles or active croplands; crossings including road, railroad, or foreign lines (utilities); waterbodies and wetlands; unusual topographic conditions such as unstable soils and trench conditions, residential or urban areas, and areas requiring rock removal.



ELBA III PROJECT

Figure 2.6-1
Pipeline Construction Sequence

Marking ROW

The first step of construction would involve marking by flags and/or stakes the boundaries of the construction ROW and extra workspaces, as well as flagging the location of approved access roads and foreign utility lines. Wetland boundaries and other environmentally sensitive areas would also be marked with appropriate fencing or flagging at this time. Prior to the start of construction, the centerline for the pipeline would be marked at 200-foot intervals.

Clearing, Grading and Fencing

The construction ROW and additional temporary work areas would be cleared of shrubs and trees and other obstructions. Fences would be cut and braced along the ROW and temporary gates would be installed to control livestock and limit public access.

The ROW would then be graded where necessary to create a reasonably level working surface to allow safe passage of construction equipment and materials. Grading would not take place in wetlands unless topographic or other features make the ROW unsafe for construction equipment. Where applicable, topsoil would be stockpiled separately from excavated subsoil. Temporary erosion controls would be installed immediately after initial disturbance of the soil to minimize erosion, and would be maintained throughout construction.

Trenching

EEC proposes to meet or exceed U.S. Department of Transportation (DOT) requirements for the depth of the trench. Excavation of the trench would be to a depth that provides sufficient cover over the pipeline after backfilling. EEC proposes to provide a minimum of 36 inches of soil cover over the pipeline in all class location areas. In areas containing rock, the pipeline may be placed in a ditch with a minimum 18 inches of cover for Class I areas and 24 inches of cover for Class II and III areas.

Where the pipeline crosses a foreign pipeline, the pipeline would typically be at a greater depth, depending on the depth of the foreign line. At least 12 inches of clearance would be maintained when crossing foreign lines, meeting DOT requirements. Where trenching is intended to take place near foreign utilities, the states involved would be contacted in order to have buried utilities identified and flagged. Trenching would only begin after completing the appropriate procedures.

EEC would employ Best Management Practices (BMPs) described in its Plan to minimize erosion during pipeline trenching operations and construction activities. Measures also would be taken to minimize free flow of water into the trench and through the trench into waterbodies. Construction through waterbodies would be scheduled so that the trench is cut just prior to pipe-laying activities. Where fluming or other similar measures are used, the crossing would be designed to pass high flows and prevent excessive scouring. Trenching across rivers and streams would be performed in accordance with all applicable federal and state requirements.

In cultivated agricultural areas, the first twelve inches of topsoil would be removed or stripped and segregated. In addition, soil would typically be stripped from the following areas; the ditch, spoil storage area in uplands and the ditch in unsaturated, unfarmed wetlands. Removed or stripped topsoil would generally be stored on the spoil side of the construction ROW. In some circumstances, however, it may be required to store the topsoil be stored on the working side adjacent to the ditch or at the edge of the construction ROW. Unless topsoil replacement is deemed more efficient by the contractor or more desirable by the landowner, up to twelve inches of topsoil in residential areas may be removed and segregated.

EEC would need to consult the COE regarding approval of spoil disposal areas or in the event of hazardous waste spills during construction on COE property.

Pipe Laying

Prior to construction, pipe is moved into the project area by rail or truck and placed in pipe storage yards or strung directly onto the ROW. The pipe laying or stringing operation involves transporting pipe sections (joints) from pipe storage yards into position along the prepared ROW. Typically, trucks or other vehicles would travel along the ROW and lay or string the individual joints parallel to the centerline of the trench so they are easily accessible to construction personnel. The joints are usually strung on the working side of the trench for bending, welding, coating, and lowering-in operations and the associated inspection activities.

Bending, Welding, Coating, and Lowering-In

After the pipe is delivered to the construction area, it would then be bent to conform to natural ground contours and for pipeline alignment purposes. After the pipe has been bent by track mounted hydraulic pipe-bending machines, it is aligned and welded. Each weld would be visually and radiographically inspected by qualified inspectors. All bending, welding and coating in the field would comply with DOT CFR 49, Part 192.

Coating designed to protect the pipe from corrosion would be applied to the entire pipe, except the joints, at the pipe mill before shipment to the site. After welding together in the field, pipe joints are coated with similar or compatible materials. Before lowering-in, the pipe coating is inspected for defects, especially all field applied coatings. All defects are repaired prior to lowering-in following construction specifications.

In some locations, it may be necessary to provide negative buoyancy to the pipe by means of set-on concrete weights, concrete coating, pipe sacks, and/or soil anchors. Set-on weights and concrete coating may be purchased or fabricated in the project area. Typically, no set-on weight or concrete coating fabrications would take place within 100 feet of waterbodies or wetlands.

Side boom tractors would be used to lower the pipe into the trench. The ditch would be free of debris and foreign material. If the bottom of the trench is rocky, the pipe may be lowered onto sandbags or support pillows. Alternative sources of padding for pipe in rocky soil might be sand, gravel or screened soil, excluding topsoil. In areas where the excavated trench material could damage the pipe, the pipe would be protected with a protective wrap of rock shield. The pipe is

placed in the ditch so as to conform to the alignment of the ditch and also not to damage the coating. Trench dewatering may be required in certain locations in order to prevent the pipe from floating and also to perform certain limited activities in the trench.

Backfilling

After the pipe is lowered into the trench, the trench is backfilled using material originally excavated from the trench. If that material is not suitable, however, additional backfill from other sources may be required. Any excess excavated materials or materials unsuitable for backfill would be spread evenly over the ROW or disposed of in accordance with applicable regulations. Where segregation of the topsoil has occurred, the subsoil would be placed in the trench first and then the topsoil would be placed over the subsoil. In order to accommodate any future soil settlement, backfilling would occur to grade or higher. Unless specifically requested by the landowner, tilling of the subsoil and topsoil would not be done.

During backfilling, EEC would take steps to minimize erosion, restore the natural contour of the ground and restore surface drainage patterns as close to preconstruction conditions as practicable. Where slopes occur along the pipeline, sand bags or foam-type trench breakers would be placed across the trench prior to backfilling in order to minimize the possibility of subsurface water flow. In other areas like stream crossings, the banks at stream and ditch crossings, and wetlands, the trench backfill would be compacted solidly and trench plugs might be used to minimize the flow of water from the intersected body to and from the trench where appropriate.

Testing

The pipeline would be hydrostatically tested in accordance with 49 CFR 192 to verify integrity and to ensure its ability to withstand the designed maximum operating pressures. EEC would need to coordinate with the COE for any withdrawal of testing water from the Savannah River. For more information on hydrostatic testing, refer to section 4.3.3.

Clean-up and Restoration

All disturbed areas would be finish graded and any remaining trash and debris would be disposed of properly in compliance with federal, state, and local regulations. EEC would implement erosion control measures, including site specific contouring, permanent slope breakers, mulch and reseeding or with soil-holding grasses. The ROW would be returned to pre-construction contours using acceptable excess soil from construction. The erosion control measures used would be in accordance with the Soil and Erosion Control Plans approved by the local soil conservation districts, appropriate state agencies, and EEC's Plan. Revegetation of non-cropland would be in compliance with seed, fertilizer, and soil additive recommendations obtained from the local soil conservation authority or as requested by the landowner. EEC would conduct periodic inspections of the ROW and further restoration measures would be implemented if necessary.

Cathodic protection test stations, rectifiers, and pipeline markers would be located along the ROW and installed in accordance with 49 CFR 192. The markers would identify EEC as the operator and also list telephone numbers for emergencies and inquiries. These facilities generally would be located at regular intervals adjacent to road crossings but within the permanent ROW.

Phase B

Phase B of the Elba Express Pipeline would include construction of the Elba Express Compressor Station and appurtenant facilities. Construction of the compressor station generally would be performed similarly to the construction sequence described for the Terminal Expansion associated facilities (see section 2.6.1, Associated LNG Facilities), including construction of foundations, building construction, delivery and installation of major equipment, installation of piping, and installation of electrical and instrumentation systems. Construction of the compressor station would be performed compliance with the construction procedures described for Phase A above and the project-wide Spill Plan, and EEC's Plan and Procedures (included as appendices D, E, and F, respectively).

2.6.3 Special Construction Procedures

Road Crossings

The impact upon traffic and transportation facilities and public inconvenience at crossings would be minimized to the extent practicable. All appropriate safety procedures would be implemented to protect workers and the public. Traffic warning signs, detour signs and other traffic control devices would be used as required by federal, state, and local Departments of Transportation and other regulating bodies. All crossings would be completed in accordance with the requirements of road crossing permits.

Minor or rarely-traveled gravel or dirt roads typically would be open-cut. Where roads are open-cut, barricades, lights, or warning signs would be in place. Typically, a steel plate would be put over the trench at open-cut road crossings to minimize traffic disruptions. After backfilling, the roadbed would be returned to original or better condition.

Where open-cutting is not permissible, EEC generally proposes to cross highways and paved roads by boring underneath the crossing and installing the pipe without a casing unless it is required by the permitting authority. There would be little or no disruption of traffic on road crossings that are bored.

Wetland Construction

Wetland construction on the Project would be conducted in accordance with EEC's project-specific Procedures. In addition, EEC would follow its project-specific Plan. EEC would employ appropriate BMPs to minimize the potential for impacts to wetlands and waterbodies. We have reviewed these plans and found them acceptable.

In general, where soils are unstable and saturated, stable temporary work surfaces in wetlands may be constructed. Board roads or travel pads on geotextile fabric are possible methods of stabilization. Typically, temporary extra work spaces are located a minimum of 50 feet from the edge of designated wetlands. If a riparian wetland is located adjacent to a waterbody, extra work space may be requested and placed in the wetland. Within wetlands, vegetation would be cut to ground level. Grading and stump removal would be performed only over the trench, except where safety conditions dictate additional removal on the working side of the ROW.

The construction procedures used to cross unsaturated wetlands would be similar to those used in dry land areas. Topsoil would be segregated in unsaturated wetlands in the same manner as agricultural lands. If the trench contains water, ditch plugs would be left in the trench prior to its entrance to the wetland. The ditch plugs are designed to minimize sediment discharges into the wetland from the open wetland trench. Points at which the trench enters and exits the wetland would be sealed with trench sack breakers or foam breakers to maintain the hydrologic integrity of the wetland where deemed necessary by qualified EEC representatives. Silt fences and/or straw bales would be installed at edges of the construction ROW in wetlands where there is a possibility for spoil to flow into undisturbed areas of the wetlands. Backfill would be well compacted, especially near the edges of the wetlands. Excess backfill would be spread over adjacent upland areas and stabilized during cleanup. Original topographic conditions and contours would be restored after completion of construction.

Construction techniques in highly saturated areas may involve the “push technique” or the “pull technique.” These techniques involve pushing the prefabricated pipe from the edge of the wetland or pulling the pipe from the opposite bank of the wetland with a winch. The trench would be made with a backhoe, dragline, clamshell dredge or a combination of the equipment. The push and pull sites, the pipe storage sites and fabricating areas are located outside the saturated portion of the wetland. Floats might be attached to the pipe to achieve positive buoyancy. After the pipe is floated into place, the floats are cut and removed and the pipe, which has lost its buoyancy, would settle to the bottom of the trench. This operation is repeated as necessary until the wetland crossing is complete. Excavated material is used as backfill and placed over the pipe to fill in the trench. Any excess soil is removed rather than mounded over the pipeline in an effort to maintain groundwater and surface flow patterns within the wetland.

Wetland Restoration

Impacts from pipeline construction are short-term and localized due to the nature of the project (*i.e.*, a linear underground utility). Pipeline construction techniques would be used to minimize workspace requirements, preserve the seed bank (topsoil segregation), and ensure germination (restore grades and avoid compaction). Successful revegetation of wetlands is expected because EEC would fully restore hydrologic conditions and soil profiles during construction, and use the existing seed bank for restoration of wetlands adjacent to the permanent ROW. We believe that natural revegetation, in conjunction with exotic/nuisance weed monitoring and control, is an adequate method of restoring wetlands in the pipeline ROW. Additional information on wetland restoration is located in section 4.4.2.

Waterbody Crossing Construction

Water flow would be maintained at all waterbody crossings and no alteration to the waterbody's capacity is planned as a result of pipeline construction. Typically, stream crossings would be perpendicular to the flow. Grading at approaches to waterbodies might be required to create a safe work surface and to allow the necessary area for pipe bending. If grading is required, it would be directed away from the waterbody to reduce the possibility of disturbed soils being transported into the waterbody by erosion or sedimentation.

Temporary bridges, called equipment bridges, would be placed across waterbodies that have perceptible flow at the time of construction with the exception of waterbodies that are too large to bridge or that would be directionally drilled. All construction equipment, except clearing and trenching equipment, would use the equipment bridge to cross the waterbody. Equipment bridges may consist of prefabricated construction mats, rail flat cars, flexi-float or other temporary bridges (Bailey bridges), or flume installations.

Flume installations include suitably sized flumes and a travel surface consisting of rock fill, sand bags, timber mats, or timber riprap. At all equipment bridge locations, care would be taken to minimize disturbance of the bank and bottom. Typically, equipment bridges are installed during the clearing and grading operation.

At all stream and river crossings, provided rock is not encountered, EEC would place the pipeline deep enough to avoid reasonable scour predictions or a minimum of five feet. Where practical, material excavated from the trench would be stockpiled above the stream banks and generally used as backfill unless federal or state permits specify differently. In addition, any excess material would be removed from the body of water and the creek, stream or river bottom would be returned to its original contour. Containment structures for the removed material would typically be silt fences and/ or straw bales and would serve to minimize the potential for soil entering the waterbody. Concrete weights or coatings might be required to provide negative buoyancy at stream crossings and in floodplains.

The pipe would be welded together in the staging areas and then carried or floated into position in the ditch. If the streambed is composed of unconsolidated material, the pipe can be pulled into place. If the streambed is rocky, the pipe can be floated or lifted across and then lowered into place.

At small streams along the ROW, a backhoe, clam dredge, dragline, or other similar equipment might be used to excavate the trench. Typically, all construction activities at a minor stream crossing would be completed within 24 to 48 hours. The introduction of sediment into the waterbody from disturbed upland areas would be minimized by placing and maintaining sediment barriers (silt fences and/or straw bales at the stream crossing).

The proposed construction procedures have been established to ensure that potential impacts to all stream and river crossings is minimized. In order to limit the time required for construction of a stream crossing, the ROW would be prepared on either side of the stream prior to the construction of the actual crossing. When crossing through wooded stream banks, care would be

taken to preserve as many trees as possible. In addition, if a crossing location may be visible from a nearby thoroughfare or if a waterbody has a high aesthetic value, mitigative measures such as alignment modifications or screening might be employed.

EEC would cross a number of waterbodies, such as the Savannah River, using the horizontal directional drilling (HDD) technique. In the event an HDD crossing of the Savannah River is unsuccessful and a new entry point or an open cut crossing becomes necessary, EEC would need to obtain the appropriate approvals from the COE.

Additional information on waterbody construction, including the use of the HDD technique, is located in section 4.3.3.

Residential Areas

EEC would employ specialized construction techniques in residential areas and in areas with residences within 50 feet of the construction workspace to ensure construction is quick and cleanup is thorough. Such techniques could include reduced construction area, stovepipe construction, drag section construction, or other construction techniques depending upon specific conditions at each site. Care would be taken to maintain clear access for emergency vehicles and to minimize or avoid disruption of utility services. Furthermore, lawns would be restored by raking, adding topsoil, if necessary, and implementing other measures specified in the landowner agreements. Site specific drawings of all work areas with residences within 50 feet would be prepared.

2.7 OPERATION AND MAINTENANCE PROCEDURES

2.7.1 Terminal Expansion

Southern LNG has on file with the FERC, Office of Pipeline Safety (OPS), and the Coast Guard, operations manuals (including emergency procedures and security plans) for the current facilities, including the Elba II expansion, in-service as of February 2006. Southern LNG would update the manuals as necessary and submit amendments to the agencies prior to commissioning the Terminal Expansion facilities.

In general, Southern LNG operates under a maintenance regime that includes corrective and preventative maintenance plans. The plans set out written procedures consistent with corporate policy and federal standards, including DOT regulations at 18 CFR Part 127.401 and subpart 193 (G) of CFR Title 49. Trained operations technicians carry out the maintenance plans and report to the Maintenance and Marine Superintendent. Southern LNG would extend the maintenance plans to include the proposed expansion facilities.

2.7.2 Elba Express Pipeline

All pipeline facilities would be designed, constructed, and operated in accordance with the DOT regulations in 49 CFR 192 and other applicable federal and state regulations (see table 2.7-1). EEC would operate and maintain the proposed facilities in accordance with industry standard

procedures designed to ensure the integrity of the pipeline, to minimize any potential for pipe failure and to provide its customers and the general public with a safe and dependable natural gas supply.

TABLE 2.7-1 Federal Siting and Design Requirements for LNG Facilities	
Requirement	Description
Thermal Radiation Protection (49 CFR 193.2057 and Section 2.2.3.2 of NFPA 59A)	This requirement is designed to ensure that certain public land uses and structures outside the LNG facility boundaries are protected in the event of an LNG fire.
Flammable Vapor-Gas Dispersion Protection (49 CFR 193.2059 and Sections 2.2.3.3 and 2.2.3.4 of NFPA 59A)	This requirement is designed to prevent a flammable vapor cloud associated with an LNG spill from reaching a property line that can be built upon.
Wind Forces (49 CFR 193.2067)	This requirement specifies that all facilities be designed to withstand wind forces of not less than 150 miles per hour without the loss of structural integrity.
Impounded Liquid (Section 2.2.3.8 of NFPA 59A)	This requirement specifies that liquids in spill impoundment basins cannot be closer than 50 feet from a property line that can be built upon or a navigable waterway.
Container Spacing (Section 2.2.4.1 of NFPA 59A)	This requirement specifies that LNG containers with capacities greater than 70,000 gallons must be located a minimum distance of 0.7 times the container diameter from the property line or buildings.
Vaporizer Spacing (Section 2.2.5.2 of NFPA 59A)	This requirement specifies that integral heated vaporizers must be located at least 100 feet from a property line that can be built upon and at least 50 feet from other select structures and equipment.
Process Equipment Spacing (Section 2.2.6.1 of NFPA 59A)	This requirement specifies that process equipment containing LNG or flammable gases must be located at least 50 feet from sources of ignition, a property line that can be built upon, control rooms, offices, shops, and other occupied structures.
Marine Transfer Spacing (33 CFR 127.105)	This requirement specifies that each LNG unloading flange must be located at least 985 feet from any bridge crossing a navigable waterway.

All pipeline facilities would be marked and identified in accordance with applicable regulations. Contact would be maintained with the public as well as with government agencies having jurisdiction over areas traversed by the pipeline and in the immediate area of the compressor station.

Cathodic protection test stations, rectifiers, and pipeline markers would be located along the ROW and installed in accordance with 49 CFR 192. The markers would identify EEC as the operator and would also list telephone numbers for emergencies and inquiries. These facilities generally would be located at regular intervals adjacent to road crossings but within the permanent ROW. The pipeline would be inspected for leakage as part of scheduled operations and maintenance also in accordance with 49 CFR 192. EEC would also participate in the local one-call system.

2.8 SAFETY CONTROLS

2.8.1 Terminal Expansion

Spill Containment

Each of the two new LNG tanks would be surrounded by an irregularly-shaped MSE dike with dimensions of approximately 600 feet x 1,000 feet at the top inside corners. Each dike would be approximately 18 feet high with an elevation of approximately 26 feet above mean low water (MLW). The dikes would be capable of containing 110 percent of the tanks' contents. The dikes would be 20 feet thick and would have no penetrations. This design would ensure spill containment, even in the unlikely event the tank fails and spills its entire contents into the secondary containment.

The piping for the new LNG tanks, which would be located within the diked areas, would be provided with a subcontainment area. The new yard piping located in the vicinity of the LNG storage tanks, but outside of the tank dikes, would be provided with a system of spill containment troughs, which would drain into the existing spill containment basin. The volume of the existing spill containment basin is sufficient to hold the volume of LNG that would be released from the single pipe rupture that would produce the highest release rate, plus the volume of LNG that could drain from the pipe following an emergency shut-down (ESD).

Each of the transfer lines from the ship unloading platforms to the tanks would be provided with a system of spill containment troughs that would draw into impounding basins. The containment system would be sized to contain the volume of LNG that could be released from the single pipe rupture that would produce the highest release rate, plus the volume of LNG that could drain from the pipe following an ESD.

Hazard Detection System

The Terminal Expansion facilities would be provided with a hazard detection system consisting of separate detection units for combustible gas, UV/IR, smoke (ionization), high temperature, and low temperature in addition to the hazard detectors already installed at the facility.

Fire Protection System

The existing Terminal has an existing fire protection system, including an ESD system. The existing Terminal fire protection system would be expanded to include the proposed expansion facilities.

2.8.2 Elba Express Pipeline

All pipeline facilities would be designed, constructed, and operated in accordance with all applicable federal, state, and local laws and regulations, including but not limited to DOT regulations 49 CFR 192.

Corrosion Protection and Detection Systems

During construction of the proposed facilities, EEC would install a cathodic protection system to prevent or minimize corrosion of the buried pipeline and aboveground facilities. The cathodic protection system impresses a low-voltage current on the pipeline to offset natural soil and groundwater corrosion potential. The condition of the pipe coating and the effectiveness of the cathodic protection system would be monitored during regularly scheduled cathodic protection surveys in accordance with federal standards and regulations. Cathodic protection surveys usually require walking the pipeline ROW with monitoring instruments. Repairs to the pipe, the pipe coating, or the cathodic protection system would be made as appropriate.

Emergency Response Procedures

The proposed pipelines and aboveground facilities must be designed, constructed, operated, and maintained in accordance with 49 CFR 192. The DOT 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 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under Section 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;
- making personnel, equipment, tools, and materials available at the scene of an emergency;
- protecting people first and then property, and making them safe from actual or potential hazards; and
- ESD of system and safe restoration of service.

Part 192 also requires that each operator must establish and maintain a liaison with appropriate fire, police, regulatory, 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.

2.9 FUTURE PLANS AND ABANDONMENT

Southern LNG and EEC currently have no plans for future expansion or abandonment of the proposed Terminal Expansion or Elba Express Pipeline facilities. In the event that an abandonment of these facilities becomes necessary, Southern LNG and EEC propose to remove aboveground structures, and would abandon in place subsurface structures. Should the facilities

be expanded or abandoned, a FERC authorization or Certificate and the associated environmental and non-environmental analysis would be required. In addition, the expansion or abandonment would be subject to appropriate federal, state, and local regulations in effect at that time.