

CYPRESS PROJECT
SENSITIVE SPECIES MITIGATION PLAN
AND
SPECIALIZED SURVEYS REPORT

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**SENSITIVE SPECIES MITIGATION PLAN
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1.0 INTRODUCTION

This Sensitive Species Mitigation Plan was developed by Southern Natural Gas Company (Southern) to address mitigation measures for protected species impacts during construction of The Cypress Project. The proposed mitigation measures are based on recommendations from the Federal Energy Regulatory Commission (FERC), the United States Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWCC), and the Georgia Department of Natural Resources (GDNR). All mitigation measures presented in this document will be implemented at all times during construction of the Cypress Project, and will not commence until Southern has received written notification from the Director of Operations of the FERC.

To comply with the requirements of Section 7 of the Endangered Species Act, informal consultation was conducted with the federal and state agencies regarding the potential occurrences of federally listed threatened and endangered species in the proposed project area. Data on the habitat and natural history of these species was requested as well as comments on the proposed survey methodologies to be used during the initial surveys. This information was compiled through:

- Review of Natural Heritage Program databases: Georgia Department of Natural Resources - Natural Heritage Program (GDNR) and Florida Natural Areas Inventory (FNAI);
- Agency correspondence including: GDNR, FWCC, USFWS, and the Florida Department of Environmental Protection (FDEP); and
- Other agency consultations and publicly available information.

Sensitive species of concern for the Cypress project are described in sections 1.1 through 1.5.

1.1 Eastern Indigo Snake (*Drymarchon corais couperi*)



Federal Status: Threatened

Florida Status: Threatened

Georgia Status: Threatened

The eastern indigo snake is the longest snake in North America, reaching lengths of up to 2.63 meters (over 8.5 feet) (Conant and Collins, 1998). This large snake is diurnal and feeds on almost any vertebrate small enough to swallow. Small mammals, birds, frogs, lizards, snakes, and turtles have been documented as prey items (Kochman, 1978, Speake et al., 1978, Odum et al, 1977). The eastern indigo snake is known to occur throughout all counties in Florida and most of the lower coastal plain of Georgia. It has one of the largest home ranges of any of our native snake species. The average home range is 4.8 hectares during the winter and 97.4 hectares during the summer, which includes a wide variety of habitats, such as pine flatwoods, scrubby pine flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, forested wetlands, streams, and pasture (Speake et al., 1978). It is even well adapted to areas of minimal human disturbance such as golf courses, citrus groves, and pine plantations, if wetlands in these areas are preserved (personal observations). Eastern indigo snakes are prone to desiccation and are almost always found near wetlands or moist, humid protective cover such as gopher tortoise burrows, windrows, or decayed stumps or logs (Speake et al., 1978). Breeding occurs November through March with peak activity occurring in December (Kochman, 1978). Five to twelve eggs are laid in May with the hatchlings emerging August through September (Kochman, 1978).

1.1.1 Eastern Indigo Snake Habitat Associates

Gopher Tortoise (*Gopherus polyphemus*)



Federal Status: None in Georgia or Florida

Florida Status: Species of Special Concern

Georgia Status: Threatened

The gopher tortoise is a medium to large size tortoise averaging 15-24 cm carapace length. It has broad spade like forelimbs and flattened toenails adapted for digging and short, stumpy, webless hind limbs. The carapace of adult tortoises is brown or tan, while hatchlings have yellow centered scutes. The plastron is unhinged and has gular scutes that project forward, especially in males (Conant and Collins, 1998). The present range of the gopher tortoise includes much of the southeastern coastal plain of the United States from eastern Louisiana to southeastern South Carolina, and throughout Florida (Auffenburg and Franz, 1982; Conant and Collins, 1998). In Georgia, the gopher tortoise occurs in small disjunct areas south and east of the Fall Line (Auffenburg and Franz, 1982). In Florida, the gopher tortoise is widely distributed and occurs in most areas where the soils and the vegetation community is appropriate (Auffenburg and Franz, 1982; Diemer, 1992).

Gopher tortoises typically inhabit deep sandy soils in longleaf pine-scrub oak habitats with a canopy and understory sufficiently open to support the growth of low growing herbaceous vegetation. Grasses, legumes, and other plant materials are the main food items of gopher tortoises, but they have been known to eat small amounts of animal matter as well as indigestible items such as charcoal and pebbles (Cox et al., 1987). The gopher tortoise is highly colonial and spends a major portion of its lifetime, generally estimated at 40-60 years, in and around a burrow which it excavates. Burrows may be 5 to 10 feet deep and 20 or more feet long and may be utilized to varying degrees by other invertebrate and vertebrate species (Cox et al., 1987). Tortoise burrows have been shown to be important refugia for snakes and amphibians that are subject to desiccation, such as the eastern indigo snake (Speake et. al 1978). Breeding occurs from May to June over most of its range. Clutches averaging 4-6 eggs (Brodie, 1959) are laid in open sunny areas, frequently the sandy apron at the mouth of the burrow. Young hatch in August and September. In the mild climate of south Florida, gopher tortoises may be active year round but in the northern portions of their range they remain dormant in their burrows in winter (Cox et al., 1987).

Florida Pine Snake (*Pituophis melanoleucus mugitus*)



Federal Status: None in Georgia or Florida

Florida Status: Species of Special Concern

Georgia Status: None

The Florida pine snake is a large, heavy bodied snake with dark brown to reddish dorsal blotches on a sand colored background (Franz, 1992). Adult pine snakes range from 48-66 inches in length, with a record of 90 inches. The scales are strongly keeled and the anal plate is single (Conant and Collins, 1998). The Florida pine snake hisses loudly when cornered or threatened (Conant and Collins, 1998; Franz, 1992).

Pine snakes typically inhabit areas with deep loose sands such as longleaf pine-xerophytic oak woodlands, sand pine scrub, pine flatwoods on well drained soils, and disturbed sites on sandy soils. It prefers open habitats to forests with heavy canopies (Franz, 1992). The Florida pine snake is extremely fossorial, living in pocket gopher tunnels (*Geomys pinetis*) and occasionally gopher tortoise burrows (Franz, 1992).

Gopher Frog (*Rana capito*)



Federal Status: None in Georgia or Florida

Georgia Status: Species of Special Concern

Florida Status: Species of Special Concern

The gopher frog is a medium sized frog ranging from 2.75 inches to 3.75 inches in length. It has short stumpy hind legs and is slightly warty. The coloration is cream or brown with dark brown markings (Conant and Collins, 1998). The legs are distinctly barred and there are distinct dorsal lateral folds down the back (Godley, 1992). There are several recognized subspecies, including the Florida gopher frog (*Rana capito aesopus*) and the dusky gopher frog (*Rana capito sevosa*), both of which occur in the Project area.

The gopher frog prefers xeric, upland habitats such as longleaf pine and turkey oak sandhills, xeric hammocks, sand pine scrub, and pine flatwoods (Godley, 1992). In these habitats, it is most often associated with gopher tortoise burrows. It may be seen several feet back from the entrance of the burrow or wandering outside the mouth of the burrow on cool, overcast days or at night (Conant and Collins, 1998). Gopher frogs rely on seasonally flooded, grassy ponds and cypress heads that do not have fish living in them as breeding habitat. Gopher frogs disperse up to a mile from these breeding ponds if suitable habitat (xeric uplands) with gopher tortoise burrows is available (Godley, 1992).

1.2 Flatwoods Salamander (*Ambystoma cingulatum*)



Federal Status: Threatened

Georgia Status: Threatened

Florida Status: None

The flatwoods salamander is a small black salamander with a white or silver netlike pattern on its back. It ranges from 3.5 inches to 5.25 inches (Conant and Collins, 1998). The aquatic larvae are brown with yellow longitudinal stripes (Ashton, 1992). Flatwoods salamanders range from Alabama across northern Florida and north through the Coastal Plain of Georgia to South Carolina. It is closely tied to undisturbed hydric longleaf/slash pine flatwoods with wiregrass understory, and breeds in shallow cypress pond wetlands. It is often associated with certain crayfish species and their burrows (Ashton, 1992).

1.3 Red-cockaded Woodpecker (*Picoides borealis*)



Federal Status: Endangered

Georgia Status: Endangered

Florida Status: Endangered

The red-cockaded woodpecker (RCW) is a small black and white woodpecker averaging between 7 and 8 inches long. It can be distinguished from other woodpeckers by its black cap and nape, white cheek patch, and black and white barred back and wings (Hovis, 1996). Its range overlaps that of two other members of its genus, the hairy woodpecker (*P. villosus*) and the downy woodpecker (*P. pubescens*). It is easily distinguished from these two species by its size and distinctive markings.

The species is found in all southern and southeastern coastal states from eastern Texas to southern Virginia, with smaller populations found in Oklahoma, Arkansas, Tennessee, and Kentucky (Lennartz et al., 1983). RCW habitat is composed of old-growth, living pines with a fire suppressed groundcover. RCWs construct cavities in living pine trees, preferably long-leaf pines, which are used as roosting and nesting sites. The species is non-migratory and individuals or a group maintain year-round territories around their nesting and roost trees (USFWS, 1985).

1.4 American Wood Stork (*Mycteria americana*)



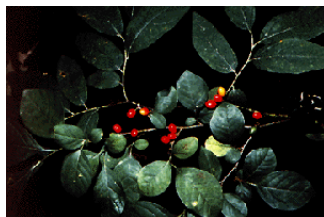
Federal Status: Endangered

Georgia Status: Endangered

Florida Status: Endangered

The wood stork is listed as federally endangered and state endangered in both Georgia and Florida. Within the Project area Chatham, Effingham, Camden, Charlton, Glynn, Liberty, Long, and McIntosh counties in Georgia (GDNR, 2005) and Clay, Duval, and Nassau counties, Florida (FNAI, 2005) potentially have populations of wood-storks. The stork population is estimated at approximately 11,000 adults. These birds prefer areas where there are freshwater or brackish wetlands. Historically, they bred throughout the southeastern United States and Texas; however, recent studies of breeding areas show that they have become restricted to Florida, Georgia, and South Carolina. They nest primarily in cypress or mangrove swamps. Nests are usually located in the upper branches of these trees (USFWS, 2000). Nesting is tied to receding water levels and concentration of food sources, regardless of date. Incubation, by both sexes lasts 28-32 days. These birds nest in colonies of a few to thousands of pairs (Natureserve, 2005). This species feeds primarily in freshwater marshes, tidal creeks, and flooded tidal pools. They prefer depressions in swamps and marshes where fish are congregated during low water conditions (USFWS, 2000). Nesting storks typically feed in wetlands within 5 to 40 miles of an active colony, but can forage up to 75 miles away (USFWS, 2005). A major problem is low productivity associated with inadequate food, caused by disruption and drainage of wetlands. The U. S. population is threatened by human manipulation of water regimes, which affect nesting and feeding sites. Controlling the water level at sites is critical to the recovery and management of this species (Natureserve, 2005).

1.5 Pondberry (*Lindera melissifolia*)



Federal Status: Endangered

State Status: Endangered

Florida Status: None

Pondberry is listed as endangered on the federal register and by the state of Georgia. This plant potentially may occur in Chatham County (GDNR, 2005). Pondberry is often associated with wetland habitats such as bottomland hardwoods in the interior areas and margins of sinks, ponds and other depressions in more coastal sites. Pondberry generally grows in shaded areas but may occur in full sun (Patrick et al., 1995). Though there are 36 known populations across the southeastern United States, the plant is presumed to be extinct from three states, one of which is Florida, in its historic nine-state range. Extensive clearing and drainage of bottomland forests has been a major factor affecting the species. Pondberry blooms in early spring before the leaves develop, and the bright red fruits often persist long after the leaves have died in the fall (Natureserve, 2005). Pondberry may share habitat with Pond Spice, which is classified as threatened by the state of Georgia.

2.0 PHASE I SURVEYS

In situ field surveys were performed by qualified biologists to determine the presence/absence of sensitive species and to identify suitable habitat for such wildlife that may occur along the Cypress Project pipeline corridor and associated facilities. Initial field surveys for the proposed pipeline right-of-way were conducted from August 23, 2000 through December 15, 2000. Additional surveys for gopher tortoises and habitat associates (eastern indigo snake, gopher frog, Florida pine snake) utilizing concentrated pedestrian surveys with the aid of infrared burrow cameras and GPS technology were conducted in March 2001 to determine the extent of the habitat or the actual presence/absence of the listed species. Suitable habitat areas for flatwoods salamanders also were investigated during these surveys. Additional field surveys were conducted between January and March, 2005 on previously unsurveyed portions of the Project facilities. These surveys were used to determine potential impacts to sensitive species from construction and operation of the Cypress Project.

2.1 Survey Methodology

ENSR, contracted by Southern, provided four field teams to survey the proposed route of the Cypress Project pipeline. Survey teams consisted of two to three experienced biologists, one serving as field team leader/wetland biologist, one as wildlife/environmental specialist, and the third as a Global Positioning System (GPS) operator. Surveys consisted of a systematic walkover of the entire pipeline route, access roads, temporary workspaces outside of the survey corridor, compressor stations, and contractor yards/warehouse yards. The survey widths were 200 feet wide in areas where the corridor paralleled existing rights-of-way and 300 feet wide in previously undisturbed areas.

The sensitive species field surveys consisted of pedestrian walkover surveys conducted in suitable habitat along the proposed pipeline route. For highly visible species (i.e., gopher tortoise, alligators, bald eagles, etc.) the field surveys consisted of biologists walking parallel transects looking for listed species or their sign (tracks, burrows, nests, etc.). At intervals the biologists stopped, remained silent, and listened for wildlife vocalizations. Spacing of these transects varied and were based on the habitat type and the potential for listed species to occur. For less visible species, suitable habitat was identified and recorded along the proposed route. Individuals, populations, and suitable habitat areas were documented in a daily

logbook and GPS technology was used to electronically record the environmental features. In addition, the locations of all observed listed species were denoted on the 1"=500' aerial photography maps, recorded on field data sheets, and mapped using GPS technology. The electronic GPS data, collected in 3D real-time, was later transferred into a Geographic Information Systems (GIS) database format for quantitative analysis.

Prior to field surveys a list was compiled of potential sensitive species and their specific habitat for each area along the corridor. This list was compiled based on available data from USFWS, GDNR, and FNAI databases. Also, available aerial photography and U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle maps were used to aid in identifying and mapping suitable habitat for each species.

After the initial surveys were completed, the identified areas containing suitable habitat or actual sightings were revisited. These follow-up surveys were conducted March 16-20 and 24-28, 2001 and February 10, 2005. Surveys were performed to determine the extent of the habitat or the actual presence or absence of the listed species. Appropriate pedestrian transects were utilized to survey the proposed corridor in these areas.

The survey corridor extended from the existing power line corridor directly beneath the electrical line closest to the proposed centerline to approximately 150 feet off of the existing power line right-of-way. Additionally, surveys were conducted on July 17, 2001 and February 10, 2005 at the RCW site in Charlton County, Georgia. Team members for the 2001 survey included three ENSR biologists, a representative from Southern, and two staff persons from the USFWS Brunswick Field Office. This survey was conducted to verify the presence of RCWs in the project area, and to determine the extent of the nesting and foraging areas. The 2005 survey, conducted by ENSR biologists with assistance from USFWS, was done to determine the present status of RCWs at the site.

For sensitive species that are more secretive (i.e. flatwoods salamander) or best identified during specific seasons (i.e. Pondberry), potential habitat was identified based on the best available described habitat characteristics and known locations. Potential habitat locations were based on *in situ* field surveys and evaluation of recent aerial photography of the project.

2.2 Results

Table 2.2-1 lists species for which individuals were found or potential habitat was identified during the initial environmental surveys, review of habitat composition along the Cypress Project, and through consultations with state and federal agencies.

TABLE 2.2-1

HABITAT OR PROTECTED SPECIES IDENTIFIED DURING INITIAL SURVEYS

State/County	MP	Species	Tracts	Habitat Description
Georgia				
Chatham	104.8-100.0	Pondberry; Pondspice		Wetlands along 30" pipeline within Chatham County.
Effingham	6.5-7.5	Eastern indigo snake	EF-058 thru EF-063	Several active gopher tortoise burrows. Potential indigo snake habitat.

TABLE 2.2-1

HABITAT OR PROTECTED SPECIES IDENTIFIED DURING INITIAL SURVEYS

State/County	MP	Species	Tracts	Habitat Description
		Gopher tortoise		
		Gopher frog		
	7.6-8.2	Eastern indigo snake	EF-064	Several active gopher tortoise burrows. Potential indigo snake habitat.
		Gopher tortoise		
		Gopher frog		
Chatham	12.8-14.5	Pondberry; Pondspice		Wetlands along 24" pipeline within Chatham County.
	R13.8-R23.7			
	R16.2-R16.3	Eastern indigo snake	CH-R36	Single active gopher tortoise burrow. Potential indigo snake habitat.
		Gopher tortoise		
		Gopher frog		
Bryan	R25.9-R26.6	Red-cockaded woodpecker	BR-R91.4	Upland Mesic habitat with slash pines.
Bryan	R25.7-24.5	Flatwoods Salamander	BR-R91.4 thru BR-117	Mixed habitat with open herbaceous areas.
McIntosh	60.3-61.0	Pondspice	MC-193	Sand ridge pond forest known to contain pondspice.
Glynn	63.1-63.4	Flatwoods Salamander	GL-195	Mixed habitat with open herbaceous areas.
	65.0-67.0	Green fly orchid	GL-195	Mixed pine oak community and nearby habitat historically contained species.
		Bluff white oak		
		Pineland Plantain		
Camden	101.0-103.5	Eastern indigo snake	CA-249 thru CA-255	Gopher tortoise burrows. Potential indigo snake habitat.
		Gopher tortoise		
		Gopher frog		
Charlton	109.9-110.2	Red-cockaded woodpecker	CR-265	Varn property RCW area.
		Flatwoods salamander		
	110.5-111.0	Parrot pitcherplant	CR-265	Pitcherplant bog historically known to contain these species.
		Hooded pitcherplant		
		Purple honeycomb head		
		Southern umbrella-sedge		
	111.2-111.5	Eastern indigo snake	CR-265	Four gopher tortoise burrows on centerline, one off centerline near pine plantation. Potential indigo snake habitat.
		Gopher tortoise		
		Gopher frog		
Florida				
Nassau	116.0-116.2	Eastern indigo snake	NA-273	Approx. 19 gopher tortoise burrows observed. Potential indigo snake habitat.
		Gopher tortoise		
		Gopher frog		
		Florida pine snake		

TABLE 2.2-1

HABITAT OR PROTECTED SPECIES IDENTIFIED DURING INITIAL SURVEYS

State/County	MP	Species	Tracts	Habitat Description
	116.5-116.7	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-273	Approx. 13 gopher tortoise burrows observed. Potential indigo snake habitat.
	116.9-117.5	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-274 thru NA-274	Gopher tortoise burrows within suitable habitat. Potential indigo snake habitat.
	118.4-118.7	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-282.A thru NA-283	Approx. 24 gopher tortoise burrows in good habitat. Potential indigo snake habitat.
	119.6-120.1	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-288	Approx. 25-30 gopher tortoise burrows. Potential indigo snake habitat.
	132.1-132.2	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-306	One gopher tortoise burrow. Potential indigo snake habitat.
	135.0-135.1	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-307	Numerous gopher tortoise burrows near reference line in semi-mature pine plantation. Potential indigo snake habitat.
	135.7-135.8	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-307	Four burrows sighted in young pine plantation. Potential indigo snake habitat.
	136.4-137.0	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-309	Several active gopher tortoise burrows in pine plantation. Potential indigo snake habitat.
	137.4-137.6	Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-309	Multiple gopher tortoise burrows found SW of reference line north of tower 6Z64. Potential indigo snake habitat.
	138.3-138.5	Eastern indigo snake Gopher tortoise Gopher frog	NA-311	Several active gopher tortoise burrows, mainly in ROW. Some clearly made by immature individuals. Potential indigo snake habitat.

TABLE 2.2-1

HABITAT OR PROTECTED SPECIES IDENTIFIED DURING INITIAL SURVEYS

State/County	MP	Species	Tracts	Habitat Description
	138.7-138.8	Florida pine snake Eastern indigo snake Gopher tortoise Gopher frog Florida pine snake	NA-311	Single active gopher tortoise burrows in ROW. Potential Indigo snake habitat.
Duval	145.5-146.1	Flatwoods salamander	DU-323	Forested area with open spaces and small wetlands.
	148.5-149.5	Flatwoods Salamander	DU-331 thru DU-334	Forested area with open spaces and small wetlands.
	151.5-155.0	Flatwoods Salamander	DU-339 thru DU-343	Forested area with open spaces and small wetlands.

2.3 Eastern Indigo Snake, Florida Pine Snake, and Gopher Frog

Since the eastern indigo snake, Florida pine snake, and gopher frog often inhabit gopher tortoise burrows, inspection of gopher tortoise burrows by infrared camera included inspection for these species. Therefore, surveys for these species were synonymous with gopher tortoise burrow investigations, and data was collected concurrently.

The eastern indigo snake may be directly impacted by individual mortality from construction procedures and equipment. Indirectly, these species may be affected by the change of habitat types that will occur along the pipeline corridor. Other indirect impacts may be the temporary loss of gopher tortoise burrows and other refugia that these species often use as hibernacula and protective cover. No eastern indigo snakes were discovered during the specialized follow-up surveys conducted in March 2001.

No Florida pine snakes were discovered during the initial surveys or during the specialized follow-up surveys conducted in March 2001. However, habitat and individuals are presumed to exist as evidenced by a shed skin of a Florida pine snake that was found on the Ralph E. Simmons State Forest in Nassau County, Florida.

No gopher frogs were discovered during the specialized follow-up surveys conducted in March 2001.

2.3.1 Gopher Tortoise

Due to their classification with GDNR and FWCC and their close association with indigo snakes, areas identified as harboring individuals, populations, or suitable habitat for gopher tortoises during initial surveys were subjected to intensive follow-up surveys by qualified biologists. Once a gopher tortoise burrow was encountered by biologists, a visual observation of the burrow occupancy status was made, and the precise location as well as specific data was collected using GPS. The burrow was then examined using a specially designed infrared camera. If the burrow was large enough, the camera was inserted into the gopher tortoise burrow to confirm the occupancy either by a gopher tortoise or an inquiline species.

Juvenile burrows usually were too small for the camera housing, therefore could not be properly examined. For each gopher tortoise burrow, data such as burrow status, occupancy, and distance to centerline was collected by GPS. The information was recorded on specialized data sheets and entered into logbooks. After the data was collected, the burrow locations were analyzed using GIS technology by overlaying the location of each burrow onto the construction corridor to determine the number of burrows that will be impacted by construction.

Table 2.3-1 shows the number of gopher tortoises and burrows confirmed by 2001 and 2005 (Effingham County) surveys along the Cypress Project survey corridor and within the actual proposed construction corridor by county and state.

TABLE 2.3-1

GOPHER TORTOISE BURROWS BY COUNTY*

State	County	Survey Corridor		Construction Corridor	
		Burrows	Individuals	Burrows	Individuals
Georgia	Effingham**	14	Not Determined	Not Determined	Not Determined
Georgia	Chatham	1	Not Determined	Not Determined	Not Determined
Georgia	Camden	26	5	17	3
Georgia	Charlton	5	2	4	2
Florida	Nassau	132	61	78	32
Total		178	68	99*	37

*does not include juvenile tortoises.

**Effingham corridor not defined at time of survey-total does not reflect Effingham populations.

Construction of the Cypress Project could have both direct and indirect adverse impacts on gopher tortoises occurring within and immediately adjacent to the construction corridor. During the actual construction phase as well as during post-construction right-of-way maintenance, heavy equipment activity could result in the harming or mortality of individual tortoises. Tortoises are also at risk of falling into open construction trenches and becoming heat-stressed or entombed. Drowning is also a possibility if the trenches contain water. Local populations may be adversely affected if burrows and nests are destroyed, although research has shown that tortoises are able to excavate themselves from collapsed burrows. Indirectly, adverse impacts could include disruption of essential behaviors such as mating, feeding, and dispersal. Table 2.3-1 lists all gopher tortoise burrows within the proposed construction corridor. Included in this plan are the locations of all gopher tortoise burrows on aerial photography. Burrows within the construction corridor will be re-examined prior to the construction phase of the Cypress Project and all gopher tortoises relocated to the adjacent habitat previously surveyed. Burrows within the corridor will then be collapsed to prevent re-occupation until construction is completed.

Gopher tortoises are known to prefer open areas with low-growing herbaceous vegetation and are often found in high densities in ruderal habitats such as maintained pipeline rights-of-way. Since much of the forested land adjacent to the Cypress Project right-of-way has developed a closed canopy with a heavy understory because of fire suppression, the opening up of a cleared right-of-way will eventually result in

gopher tortoises moving from poorer quality adjacent habitats to establish burrows in the new right-of-way. Although not comparable to habitat provided by a more natural fire maintained pine forest, the potential long-term impacts of pipeline construction may actually be beneficial where available suitable habitat has been degraded by fire exclusion and associated canopy closure.

The eastern indigo snake, Florida pine snake, and gopher frog may be directly impacted by individual mortality from construction procedures and equipment. Indirectly, these species may be affected by the change of habitat types that will occur along the pipeline corridor. Other indirect impacts may be the temporary loss of gopher tortoise burrows and other refugia that these species often use as hibernacula and protective cover.

2.4 Flatwoods Salamander

The entirety of the Cypress Project pipeline is within the historic range of the flatwoods salamander, but little of the habitat traversed by the pipeline route is suitable for this species. The preferred habitat of flatwoods salamanders is relatively open and undisturbed mesic woodland of longleaf/slash pine flatwoods that is maintained by frequent fires. This species also requires shallow ephemeral grassy cypress-gum ponds and swamps for breeding.

There are eight extant populations of flatwoods salamanders known to occur in Georgia, which are spread out through Bryan, Evans, Liberty, Long, Baker, and Miller counties. Most of these populations occur on the Fort Stewart Military Reservation and on the Ichauway Plantation (Joseph W. Jones Ecological Research Center) (GDOT, 2004). Historical records are known from Bryan, Charlton, Effingham, Chatham, and McIntosh counties in Georgia (USFWS, 2005).

Supplemental surveys were conducted for this species in areas where suitable habitat was identified during the initial Project surveys. In March of 2001, individuals and suitable habitat for flatwoods salamanders were investigated during specialized surveys. No flatwoods salamanders were discovered during these specialized follow-up surveys.

Upon request from USFWS, the project corridor was re-evaluated by Southern for potential flatwoods salamander habitat in August 2005 using the best and most current available information. This evaluation was conducted using aerial photographs of the Project corridor and was based on indicators outlined by GDNR in conjunction with Georgia DOT; a review of available Georgia Rare Species Information (GDNR, 2005) and Florida rare species databases (FNAI, 2005); collected field data; and habitat descriptions.

This evaluation indicated that the Cypress Project is in the vicinity of several areas that are known locations of the flatwoods salamander; however, in an analysis of the Project corridor by GDNR (June 17, 2005), known locations of this species were not identified as potentially impacted by the Project.

Table 2.4-1 itemizes the results of the evaluation of the potential for the Cypress Project to impact flatwoods salamanders (including historical locations received in correspondence from USFWS, review of GDNR and FNAI databases, and previous field surveys).

TABLE 2.4-1

**ANALYSIS OF POTENTIAL FLATWOODS SALAMANDER HABITAT ALONG THE
 CYPRESS PROJECT**

State/County	MP	Quad (1/4 Q)	Potential Habitat	Comment
Georgia				
Chatham/ Effingham	102-98.3	Port Wentworth (NW)	No	Some residential. Mixed hardwoods, clear cut areas. No pine flatwoods.
Effingham	98.3-96.7	Meldrim (NE)	No	Bedded pine plantation, sod farm, highly disturbed clear cut areas. No fire regime.
	96.7-94.9	Springfield South (SE)	No	Intensely managed timberlands with bedded pine plantations. No fire regime.
	0-2.2	Springfield South (SE)	No	Disturbed area – mixed residences and bedded pine plantations. No fire regime.
	n/a	Rincon	No	Historical record 8 miles from Bloomingdale. Potential habitat is outside of construction corridor.
Chatham	n/a	Meldrim Southeast	No	Historical record along Quacco Road. Construction corridor is on opposite side of Little Ogeechee River.
	11.8-R16	Meldrim Southeast (NW)	No	3 Historical records from area near MP R14-R15. However, area along construction corridor is bedded pine plantation, with no fire regime.
	R16-R18	Meldrim Southeast (SW)	No	Bedded pine plantation. No fire regime.
	R18-R22.1	Meldrim Southeast (SE)	No	Mixed hardwoods or bedded pine plantations. No fire regime.
Chatham/Bryan	R22.1-R25	Richmond Hill (NE)	No	Ogeechee River and Lost Swamp. Mixed hardwood swamp.
Bryan	R25.7-24.5	Richmond Hill (NW)	Yes	
	n/a	n/a	No	Historical record south of Pembroke. Outside of construction corridor. Pipeline will cross on the opposite side of Ft. Stewart.
Liberty	28.5-31.5	Limerick Northwest (SW)	No	Bedded planted pine. No fire regime.
McIntosh	56.8-58.5	Townsend (SW)	No	Historical record near Townsend Gunnery Range. Habitat along construction corridor is bedded planted pine. No fire regime.
	58.5-61.2	Cox (NW)	No	Historical record near Townsend. Habitat along construction corridor is bedded planted pine. No fire regime.
	61.2-63.1	Cox (NW)	No	River flood plain. Mixed hardwoods.
Glynn	63.1-63.4	Cox (NW)	Yes	
	63.4-63.8	Cox (NW)	No	Bedded planted pine. No fire regime.
Charlton	n/a	Toledo (maybe Tabarro?)	No	Historical record east of Chesser School. Outside of construction corridor. Pipeline does not cross this quad.
	109.9-110.2	Boulogne	Yes	Varn property – RCW colony; potential FWS habitat.
Florida				
Duval	145.5-146.1	Baldwin	Yes	
	146.1-148.5		No	Bedded planted pine. No fire regime.
	148.5-149.5		Yes	
	149.5-151.5		No	Commercial area, with mixed bedded pine planted pines. I-10 and Brandy Branch Power Plant in this area.
	151.5-155.0		Yes	

Most habitat types to be impacted by the Cypress Project have been previously altered and are extensively managed. The forested areas traversed by the pipeline are generally managed as pine plantation, which is generally unsuitable for flatwoods salamander success.

There are no known recent or historical occurrences of the flatwoods salamander along the proposed pipeline route. The majority of upland areas crossed by the Project are pine plantations that are not regularly maintained with a fire regime. Potential habitat for this species along the Cypress Project pipeline corridor has been identified in Bryan and Glynn counties, Georgia as well as in Baldwin County, Florida. The identified potential habitat has been re-surveyed for suitable habitat characteristics and/or the presence of flatwoods salamanders during additional Phase II surveys conducted in March 2006. These surveys were conducted during the timeframe when larval flatwoods salamanders should be present in the associated isolated wetlands of their habitat. No occurrences of flatwoods salamanders were discovered during these surveys.

2.5 Red-cockaded Woodpecker

Areas of mature pine forest where habitat for the RCW could occur were identified during initial surveys along the proposed route. Follow-up surveys were conducted in March 2001 by qualified biologists with previous red-cockaded woodpecker experience. The biologists revisited these areas along the pipeline route with high potential for RCWs to re-survey in accordance with methodology outlined by V. Gary Henry (1989). Additional RCW surveys were conducted at approximate MPs 25.9-26.4 in Bryan County, Georgia and in Charlton County between MPs 109.92 and 110.76. No nest cavities or individuals of this species were observed during these surveys. In the area known to support a red-cockaded woodpecker group in Charlton County, the survey encompassed only the preferred corridor and a proposed re-route. The known nesting area occurs outside of the proposed pipeline corridor in an area where permission was not initially granted for survey.

Survey permission was obtained from the landowner in Charlton County to conduct additional surveys on the property outside of the Project corridor, and a team consisting of biologists from ENSR, Southern, and the USFWS re-surveyed the area on July 17, 2001. Areas on both sides of the existing transmission corridor were surveyed by the team walking north-south transects and looking for visible and auditory signs of RCWs. Birds and nest cavities were seen, and all nest cavities observed were photographed and their locations recorded using GPS equipment. Information recorded included location and dbh of cavity trees, estimated cavity height on the tree, and direction of the opening. This information was forwarded to the USFWS Brunswick Field Office in a letter report. An electronic data file was included with the information sent. A re-route has been implemented by Southern at this location in consultation with the USFWS to eliminate impacts to the RCW nesting and foraging areas. The site was re-visited in February 2005 to determine the status of the RCW group.

Potential impacts to RCWs by pipeline construction could include the loss of foraging, cavity, and potential cavity trees and disturbance of nesting RCWs. The loss of any pine trees greater than 30 years old would adversely impact the small population of RCWs within the project area. The initial route of the proposed Cypress Project pipeline had potential to impact an area populated by RCWs. A re-route has been proposed outside of RCW nesting and foraging habitat which will eliminate impacts to this population. Additionally, as is practical, construction of the Cypress Project in this area will be scheduled to take into consideration the nesting requirements for this species.

2.6 American Wood Stork

Almost the entirety of the Cypress Project pipeline within Georgia is within the 40 mile foraging range of the coastal wood stork rookeries. A known wood stork rookery is located in Camden County, Georgia less than a mile from the construction corridor (USFWS, 2005). This rookery site is near the planned HDD crossing of the Little Satilla River at MP 86.3.

No wood stork nesting sites were identified during field surveys for the Cypress Project. During surveys in late 2000 in Nassau County, Florida, wood storks were observed circling above the survey site.

The Cypress Project has the potential to temporarily disturb foraging and nesting wood storks. Noise from construction and HDD operations could temporarily distract wood storks away from active construction areas. No permanent impacts are anticipated as Southern will minimize impacts to wetland areas to the extent practicable. A reduced construction corridor and maintained right-of-way in wetlands will minimize impacts and preserve foraging habitat for wood storks. Impacts also will be minimized by adopting construction protocols that will not disturb wood storks in the event any are present during construction. HDD operations in the area of the know wood stork rookery are anticipated to be completed prior to the wood stork nesting season (March-August), and therefore noise from the HDD should not deter nesting in the area. Additionally, Southern has adopted specific noise reduction protocols at the HDD sites that will mitigate noise related impacts to nesting wood storks.

2.7 Pondberry and Pond Spice

Along the Cypress Project corridor pondberry and pond spice may occur only in two counties in Georgia; Chatham and Effingham. During field surveys conducted in late 2000 and early 2005 along the pipeline route in Chatham and Effingham counties, Georgia, pondberry and pond spice, as well as their described habitat, were specifically surveyed for along the pipeline corridor. However, no pondberry or pond spice was observed during field surveys. Initial surveys in the locations where these plants have potential to occur were conducted prior to the growing/fruited season. Lack of identifying features indicated that additional surveys were necessary during the flowering period for these species.

Avoidance and/or specialized construction techniques will be used to preserve pondberry or pond spice if found within the Cypress construction corridor. A reduced construction corridor and maintained right-of-way in wetlands will mitigate impacts by preserving much of the available habitat for these species. Also, impacts from construction will be short-term and localized due to the nature of the project (i.e., a linear underground utility). Construction techniques will be used to minimize workspace requirements, preserve the seed bank (topsoil segregation), and ensure germination (restore grades and avoid compaction), and thus enhance recovery through restoration procedures. Successful revegetation of wetlands is expected because Southern will fully restore hydrologic conditions and soil profiles during construction, and use the existing seed bank for restoration of wetlands adjacent to the permanent right-of-way.

3.0 PHASE II SURVEYS

During appropriate survey windows, locations that have been identified in the Phase I surveys as supporting or having the potential to support sensitive species were re-surveyed. During these surveys, the presence/absence of the identified species were verified. Based upon the results of these surveys, specific conservation and mitigation measures will be taken to avoid negative impacts. Itemized in Table 3.0-1 are the locations and timeframes of subsequent surveys.

TABLE 3.0-1

PHASE II SURVEYS FOR THE CYPRESS PROJECT

State/County	MP*	Species	Anticipated Survey Timeframe
Georgia			
Chatham – 30” Loop	104.8-100.0	Pondberry, Pondspice	March 2006
Effingham - 24” Line	6.5-8.2	Eastern indigo snake, gopher tortoise, gopher frog	December – March 2006
Chatham	12.8-R23.7	Pondberry, Pondspice	March 2006
		Eastern indigo snake, gopher tortoise, gopher frog	December – March 2006
Bryan	R25.7-24.5	Flatwoods salamander, red cockaded woodpecker	March 2006
McIntosh	60.3-61.0	Pondspice	March 2006
Glynn	63.1-63.4	Flatwoods salamander	March 2006
	65.0-67.0	Green fly orchid, bluff white oak, pineland plantain	March 2006
Camden	101.0-103.5	Eastern indigo snake, gopher tortoise, gopher frog	December-March 2006
Charlton	109.9-111.0	Flatwoods salamander, red cockaded woodpecker, pitcher plant bog	March 2006
	111.2-111.5	Eastern indigo snake, gopher tortoise, gopher frog	December-March 2006
Florida			
Nassau*	116.0-138.8	Eastern indigo snake, gopher tortoise, gopher frog, Florida pine snake	December-March 2006
Duval*	145.5-155.0	Flatwoods salamander	March 2006

*Only sections identified in Table 3.0-1 were surveyed within these MP during Phase II surveys.

3.1 Eastern Indigo Snake, Gopher Tortoise, Florida Pine Snake, and Gopher Frog

Field surveys of identified potential indigo snake habitat were conducted to determine the presence/absence of indigo snakes. During field surveys the proposed construction corridor, all proposed facilities sites, all pipe storage/contractor work yards and all adjacent areas that have been previously identified as suitable habitat for gopher tortoises and their commensals, and that might potentially be disturbed during construction, were surveyed (Table 3.0-1). Timing of surveys was scheduled during the months December-March when the home range of the indigo snake and gopher tortoise is reduced and likelihood of finding indigo snakes associated with gopher tortoise burrows is increased.

At each identified habitat the following methodology was used:

1) Transect and visual search: Surveyors walked transects (40-foot maximum) and visually searched the habitat. Surveyors were observant of active snakes on the surface, shed snake skins, gopher tortoise burrows, and any snake tracks associated with gopher tortoise burrows. The ground around any type of cover (e.g. saw palmetto, downed trees, etc.) were searched for shed skins. The apron and entrance to each gopher tortoise burrow was examined for snake activity. GPS locations for all gopher tortoise burrows and potential snake refugia was recorded. The presence of indigo snakes or sign in any of the

surveyed areas will require further observational study of the area and will be used to identify the specific location or burrow that may support an indigo snake.

2) Inspection of Burrows: Burrows suspected of supporting indigo snakes, but not verified by sighting an active indigo snake, were inspected with a remote video system to determine occupancy. Consultations with USFWS were re-initiated to determine the best alternatives to proceed with construction where indigo snake habitat has been verified by surveyors.

All active, inactive and abandoned gopher tortoise burrows within the Cypress survey corridor were inspected with a remote video system to determine occupancy by tortoises and/or protected commensal species.

3.2 Flatwoods Salamander

Southern will implement measures to identify and protect the flatwoods salamanders from the construction activities along the proposed Cypress Project. Survey methodology for flatwoods salamanders was adapted from techniques described in Survey and Reporting Methodology for *Ambystoma cingulatum* (flatwoods salamander) developed by GDNR in conjunction with GDOT (GDOT, 2004).

Survey Methodology:

Habitat viability: The purpose of this survey was to assess the terrestrial habitat and any associated wetlands for suitability to support flatwoods salamanders. Where potential habitat has been identified along the Cypress Project corridor, an *in situ* survey of the area within 300 feet of the proposed right-of-way was conducted to determine if viable habitat exists for flatwoods salamanders. The locations were inspected and classified as viable or non-viable based on the presence of the following characteristics:

- 1) Terrestrial habitat – open, mesic woodland of longleaf pine flatwoods maintained by frequent fire.
- 2) Isolated ephemeral depressional wetlands (not within or directly adjacent to floodplains or stream terraces; also contain no surface outlets other than poorly defined drainageways). These wetlands are typically cypress domes or cypress/black gum ponds.
- 3) Herbaceous understory vegetation within wetlands.
- 4) Presumed ability of isolated wetlands to hold water for at least 90 days.

Surveyed areas not meeting these criteria were determined to be non-viable to support flatwoods salamanders. Rationale for such determinations was noted and efforts to identify flatwoods salamanders in this location have been concluded.

Larval Sampling: Subsequent to an on-site survey and the determination of viability of the potential habitat to support flatwoods salamanders, larval sampling was conducted by dip netting in wetlands meeting the previously described criteria. Larval sampling was conducted in a timeframe between late February and early March and utilized equipment and techniques outlined in the previously referenced protocol (GDOT, 2004).

Should any flatwoods salamander larvae be found during subsequent investigations prior to construction, Southern will re-initiate consultations with the USFWS to develop appropriate mitigation measures.

Additionally, Southern will educate all construction and maintenance personnel about flatwoods salamander ecology, their protected status, lawful consequences of harming or harassing the species, and conservation measures. Informational pamphlets will be provided containing information describing the salamander, its protection under federal, Georgia and Florida laws, clear instructions not to injure, harm, harass, or kill the species, and telephone numbers to call if a flatwoods salamander is discovered. If a flatwoods salamander is sighted during construction, then construction will be delayed in the area until consultation with USFWS can be completed.

3.3 Red-cockaded Woodpecker

Locations along the Cypress Project that are known to support red cockaded woodpeckers have been evaluated during field survey efforts between December and March. USFWS has been consulted prior to beginning RCW evaluations to determine if any further habitat surveys are warranted from a computer based process referred to as the Foraging Matrix, which is currently under development (USFWS, 2005).

Along the Cypress Project, special precautions will be necessary in Charlton County, Georgia where the RCW is known to occur. Certain conservation measures will be undertaken to prevent any disturbance to this species nesting or foraging habits.

As recommended by the USFWS, the Cypress Project will not conduct any construction activities within ½ mile of the currently known nesting site from the month of April to the end of July. Any construction during this time will be prohibited. Southern also will agree not to fell any tree within their foraging area that is greater than 30 years old.

Southern will educate all construction/maintenance personnel about RCW ecology, their protected status, lawful consequences, and conservation measures. Informational pamphlets will be provided containing information describing the woodpecker, its protection under federal, Georgia and Florida laws, clear instructions not to injure, harm, harass, or kill the species, and telephone numbers to call if a RCW is discovered.

Post construction activities should not impact the RCW, but as a precaution, activities along the right-of-way should be minimized to decrease the likelihood of disturbance. Future mowing and right-of-way maintenance activities should not affect the behavior of the RCW but should be minimized during its nesting period.

3.4 Pondberry and Pond Spice

Sites that had been identified as potential habitat for pondberry and pond spice were surveyed for the presence/absence of this species during early March 2006 prior to construction. This is the timeframe described during which this plant is most likely to be producing flowering parts and new foliage, which aid in the recognition and identification of the species. Survey methodology included visually inspecting the potential habitat along transects by qualified biologists.

Specialized construction techniques will be used to preserve pond spice located within the Cypress construction corridor. A reduced construction corridor, use of the adjacent powerline corridor, and matting on the right-of-way in wetlands will reduce impacts to existing plants. In addition, impacts from construction will be short-term and localized due to the nature of the project (i.e., a linear underground utility). Construction techniques will be implemented to minimize workspace requirements, preserve the seed bank (topsoil segregation), and ensure germination (restore grades and avoid compaction), and thus enhance recovery through restoration procedures. GDNR recommends avoiding draining of the site in its management recommendations for pondberry (Patrick et al, 1995). Therefore, Southern will fully restore

hydrologic conditions and soil profiles during construction, and use the existing seed bank for restoration of wetlands.

4.0 PHASE III - MITIGATION, MONITORING, AND CONSERVATION

Before, during, and after construction of the proposed Cypress Project, Southern will implement specific measures to protect eastern indigo snakes, gopher tortoises, Florida pine snakes, gopher frogs, flatwoods salamanders, wood storks, red cockaded woodpeckers, and pondspice. Informational pamphlets will be provided regarding the protective status of these species in Georgia and Florida and informing Project personnel that under no circumstance should any animal found on the right-of-way be killed. The pamphlet will contain descriptions of all protected species and will be used to train construction personnel.

The Southern “no-kill” policy will be in effect during all phases of the Cypress Project and on the proposed construction corridor, the proposed facilities sites, the pipe storage/contractor yards, and all adjacent areas that might be affected during construction. This policy will serve as Southern’s protocol to protect highly mobile and transient species during construction and operation of the Cypress Project. All highly mobile species will be allowed to leave the area of their own accord without harassment by construction contractors. If any animal needs to be removed from the construction site, a qualified biologist will be called to prevent harm to that species.

To mitigate any adverse impacts to wood storks during construction and operation of the Cypress Project, Southern will adopt a “stork protocol.” These measures will be followed in the event foraging wood storks are encountered at a construction site. If wood storks are encountered during construction, the birds will be left undisturbed and will be allowed to leave the area of their own accord, without harassment.

To mitigate impacts to pondspice and other sensitive plants, specialized construction techniques will be used to minimize workspace requirements, preserve the seed bank (topsoil segregation), and ensure germination (restore grades and avoid compaction), and thus enhance recovery through restoration procedures. GDNr recommends avoiding draining of the site in its management recommendations for pondspice (Patrick et al, 1995). Successful revegetation of wetlands is expected because Southern will fully restore hydrologic conditions and soil profiles during construction, and use the existing seed bank for restoration of wetlands adjacent to the permanent right-of-way.

4.1 Preconstruction Measures

In order to mitigate impacts to indigo snakes and their habitat associates, as well as aid in conservation of these species, prior to initiation of any construction activities, field surveys will be scheduled for gopher tortoise burrows and the presence/absence of indigo snakes in locations documented in Phase II surveys. Timing of surveys will be appropriately scheduled prior to the beginning of construction of the Cypress Project in each area. The Florida Fish and Wildlife Conservation Commission has conditioned the gopher tortoise relocation permit for the project to allow for relocations at a maximum of six weeks prior to construction between November 2006 and February 2007, and a maximum of four weeks before November 2006 or after February 2007. Other conditions listed in the Florida gopher tortoise relocation permit and Commission guidelines will be adhered to during all phases of gopher tortoise relocations in Florida.

In general, the following methodology will be used at each identified location:

1) Transect and visual search: Surveyors will walk transects and visually search the area for previously

identified, as well as any unidentified, gopher tortoise burrows. Surveyors will also be observant of active snakes on the surface, shed snake skins, gopher tortoise burrows, and any snake tracks associated with gopher tortoise burrows. The ground around any type of cover (e.g. saw palmetto, downed trees, etc.) will be searched for shed skins. The apron and entrance to each gopher tortoise burrow will be examined for snake activity. GPS locations for all gopher tortoise burrows and potential snake refugia will be confirmed or recorded as necessary. If the presence of indigo snakes in any of the surveyed areas is established, further observational study of the area will be used to identify the specific location or burrow that may support an indigo snake.

2) Inspection of Burrows: After visual observation of the habitat for the presence/absence of indigo snakes and gopher tortoise burrows, efforts will be made to further analyze the habitat. All active, inactive and abandoned gopher tortoise burrows will be inspected with a remote video system to determine occupancy by indigo snakes, gopher tortoises and/or protected commensal species. Consultations with USFWS will be re-initiated to determine the best alternatives to proceed with construction if indigo snakes are verified by surveyors.

After the absence of indigo snakes at an area has been established, all protected commensal species would be given opportunity to leave burrows on their own, or trapped if necessary.

3) Relocation and Burrow Collapse: All burrows (active, inactive, and abandoned) will be excavated to conclusively determine that they are unoccupied by indigo snakes, gopher tortoises or vertebrate commensals. At Southern's discretion, it will excavate burrows that, upon a reasonable investigation using surface conditions (evidence of activity – tracks, debris in entrance, erosion) and with the aid of an infrared camera, are determined to be unoccupied to prevent occupation by tortoises or their symbionts prior to relocation of the tortoises in the area.

All burrow excavation efforts will be directly supervised by a biologist with previous experience excavating gopher tortoise burrows. Hatchling, sub-adult, and some adult burrows will be hand excavated, using shovels. Backhoes may be used to excavate adult burrows. Backhoe buckets will have their teeth removed or a metal plate welded over the teeth. Before beginning hand or backhoe excavation, a flexible tube, with length graduations marked, will be inserted into the burrow to ensure that the burrow path is not lost and to indicate the distance to the end of the burrow or to the tortoise/commensal. Throughout the excavation process, the burrow will be frequently inspected to insure that the tortoise/commensal has not moved to a position where it might be injured by the backhoe or shovel. The last 1-2 feet of the burrow will be excavated by hand using shovels and small hand spades. Following removal of the tortoise/commensal, all excavated burrows will be refilled (Blankenship and Thomas, 2005).

Captured tortoises will be photographed (dorsal, ventral, and anterior views), measured, weighed, sexed (if possible), aged (if possible), and marked using a standard marginal scute numbering scheme. All gopher tortoises displaced by Southern will be examined for possible signs of upper respiratory tract disease (URTD) (e.g. clogged nostrils, nasal exudates, closed/watery eyes, lethargy, etc.). Any symptomatic tortoises will be kept separate from other tortoises and will be immediately reported to the appropriate FWCC, FDEP or GDNR office. Southern will take whatever steps deemed necessary by the agency to facilitate collection of blood samples from displaced tortoises for URTD analysis. Immediately following data/blood sample collection (if required), each tortoise will be released into an unoccupied burrow located in un-impacted habitats adjacent to the construction corridor. Release burrows will be inspected with a remote video system to ensure that they are unoccupied. In areas with limited numbers of existing, unoccupied burrows, starter burrows will be dug for release of displaced tortoises. Starter burrows will be dug at a 20-30 degree angle with shovels/post-hole diggers/power augers to the greatest length possible (minimum 3-4 feet) and with a shape similar to the burrow being replaced. Displaced

tortoises will be released into unoccupied/starter burrows only within the boundaries of the colony area.

Gopher tortoise burrows adjacent to the construction corridor will be clearly identified and protected to prevent inadvertent impacts from heavy equipment and related construction activities. To accomplish this, barricade fencing will be erected along the right-of-way edge. Barricade fencing will be monitored and repaired/replaced, as necessary, throughout construction and will be removed following re-vegetation and final cleanup of the construction corridor.

Prior to collapsing burrows during the nesting season, the apron near the entrance of the burrow will be examined for eggs. Any eggs found will be carefully excavated, carried without rotation, and reburied in a suitable location away from the construction right-of-way. Egg relocation sites will be documented and protected by wire enclosures constructed of a two-inch mesh size to exclude mammalian predators, but large enough to permit hatchlings to escape.

To minimize the risk of disease transmission, all materials used during the displacement of gopher tortoises from the construction corridor (e.g. traps, shovels, backhoe buckets, remote video cameras, etc.) will be disinfected with a dilute chlorine solution after each use. Tortoises will be handled with disposable latex gloves which will be changed after handling each tortoise.

Gopher tortoises will only be captured and displaced during periods when they are active. In Florida, relocations will follow guidelines provided by the FFWCC regarding temperature requirements. Displacement efforts will take place just prior to the onset of construction activities. Just before initiating construction activities in a given area, the construction right-of-way will be resurveyed to ensure that no new burrows have been dug since tortoises were displaced from that area. Any additional tortoises or protected commensal species found within the burrows will be handled as described above. All biologists involved in capturing, handling and displacing gopher tortoises from the construction corridor will have previous experience working with gopher tortoises or will be directly supervised by biologists with previous gopher tortoise experience.

The survey report documenting the results of the preconstruction survey, capture and displacement of gopher tortoises shall include the following information:

- the name(s) and qualifications of the investigator(s);
- survey date(s);
- area surveyed (including mileposts);
- specific burrow location(s) (milepost, distance from pipeline center), and direction N/S/E/W);
- survey method(s);
- burrow size, condition, and activity level (active, inactive, or old);
- the individual marking used to identify each relocated tortoise and their associated original and relocated burrow sites;
- mitigation measures to be implemented and, if applicable, relocation site and date of relocation; and
- conclusions.

These reports shall be submitted to the FWCC, FDEP and GDNR and marked "PRIVILEGED AND CONFIDENTIAL – DO NOT RELEASE".

Prior to any construction activities, Southern will require all construction personnel to attend a brief educational presentation to acquaint them with gopher tortoise ecology, its protected status, and Southern's conservation/mitigation efforts. The primary focus of this presentation will be to familiarize construction personnel with the regulatory protection afforded the gopher tortoise and protected commensal species and the legal consequences of non-compliance with those regulations.

4.2 Construction

All construction activities within the vicinity of occupied tortoise burrows will be monitored by biologists with previous gopher tortoise and protected commensal experience or by qualified individuals directly supervised by biologists with previous gopher tortoise and protected commensal experience. During actual construction, gopher tortoises in burrows near the construction corridor will likely remain in their burrows. However, during periods of minimal/no construction activity, gopher tortoises may wander into the construction corridor and could potentially fall into open trenches or excavate new burrows. Gopher tortoises are particularly known to excavate burrows into spoil piles. To prevent impacts to such tortoises, all construction areas, open trenches and spoil piles in the vicinity of occupied gopher tortoise burrows will be inspected daily prior to the initiation of construction activities. Following data collection, any gopher tortoises found in trenches will be immediately released into a nearby unoccupied/starter burrow. Any new burrows that are found within the construction corridor or spoil piles will be inspected for occupancy using a remote video system. Occupied burrows will be excavated and the tortoises handled. Data will be collected and the tortoise will be released into a nearby unoccupied/starter burrow following preconstruction procedures. Unoccupied burrows will be collapsed.

Except in emergency situations, only project biologists and specifically trained environmental inspectors would be allowed to handle tortoises and protected commensal species. The project biologists and environmental inspectors will have access to radios and/or cellular phones while in the field. If a gopher tortoise or commensal species is encountered by construction personnel within the construction corridor, all activities that might harm the tortoise or protected commensal species will cease and a project biologist or environmental inspector will be summoned. Efforts will be made to allow the tortoise or commensal species to leave the construction area on its own. If necessary, the tortoise or commensal will be captured and released into a nearby unoccupied burrow or directly into suitable adjacent habitat a safe distance from ongoing construction activities. If a tortoise or commensal is released into adjacent habitat, it will be monitored as necessary to ensure that it does not return to the construction corridor.

At no time will construction equipment or fuel be stored (overnight or long-term) within 100 feet of any occupied gopher tortoise burrows. No fueling of equipment will take place within 100 feet of any occupied gopher tortoise burrows.

If a gopher tortoise or protected commensal species is found dead during construction activities, the specimen will be frozen and the USFWS, FWCC, FDEP or GDNR, will be notified within 24 hours of the incident.

4.3 Post Construction

After construction is completed, Southern proposes to maintain a 50-foot wide corridor over its pipeline in upland areas. All exclusion barriers will be removed and the flora and fauna will be allowed to re-inhabit the area.

Mowing activities will be conducted between November 1 and March 1, during the gopher tortoise and indigo snake inactive season. Mowing will be conducted at a frequency sufficient to maintain suppression of woody growth on the right-of-way, which in some areas may be as often as once a year, but typically scheduled on a three-year basis. No herbicides will be used to control vegetation within areas occupied by gopher tortoises or protected commensal species. Southern will train mowing personnel in indigo snake and gopher tortoise awareness and will provide maps showing the locations of known active/inactive burrows on or near the right-of-way. Maintenance personnel will use power equipment to mow the vegetation surrounding the burrows, but will reduce their speed within 50 feet of

burrows. Hand pushed mowers and hand-held equipment will be used within 15 feet of tortoise burrows, and maintenance personnel will avoid mowing across the burrow apron, burrow entrance and the area immediately behind the entrance.

Except for travel on existing roads and paths, routine maintenance activities (unrelated to vegetation maintenance) will be restricted to areas at least 15 feet from tortoise burrows. Where these maintenance activities may be required to be closer than 15 feet from burrows, only hand-held equipment will be used, and maintenance personnel will avoid the burrow apron, entrance, and area immediately behind the entrance. Occasionally, maintenance activities requiring excavation (e.g., repairing damaged pipe coating, maintenance of underground structures, etc.) may be necessary. If such excavations occur within 50 feet of gopher tortoise burrows, all burrows will be clearly marked for avoidance. All excavation areas within the vicinity of gopher tortoise burrows will be surrounded by a fence with a minimum 2-inch mesh to exclude tortoises. It is possible on rare occasions that maintenance activities requiring excavation will require capture and displacement of gopher tortoises or protected commensal species. In such instances a qualified biologist will trap/excavate the individual, collect data, and release the individual into a nearby unoccupied starter burrow using preconstruction relocation procedures.

In the event of an emergency (e.g., pipeline leak or blowout), it may be necessary to begin repair work immediately. In such cases, efforts will be made to protect any indigo snakes, tortoises or commensals that may be located in the area. A qualified biologist will be called to the site as soon as possible to assess the potential impacts of the emergency situation and repair work on nearby tortoises or protected commensal species and to prevent further impacts during ongoing repair work. The nearest USFWS, FWCC, FDEP or GDNR office will be immediately contacted concerning any adverse effects on these species.

If any individual of a sensitive species is found dead during operation and maintenance activities, the specimen will be frozen and the appropriate USFWS, FWCC, FDEP or GDNR office will be notified within 24 hours of the incident.

5.0 CONCLUSION

Unless appropriate conservation/mitigation measures are implemented, construction of the Cypress Project could have adverse direct and indirect impacts on the aforementioned listed species found within and adjacent to the proposed construction right-of-way. Where possible, Southern has re-routed its line and modified construction methods to avoid impacts to sensitive species. The presence/absence of eastern indigo snakes and flatwoods salamanders will be established in areas identified as potential habitat. To minimize impacts to the gopher tortoise and the number of listed species that share its habitat requirements, Southern proposes to temporarily displace gopher tortoises occurring in the remaining burrows within the construction corridor into areas immediately adjacent to the corridor and the installation of silt fence barriers. Furthermore, provisions will be made to minimize any adverse impact to sensitive species by educating construction crews, placement of informational signs, and the adoption of “no kill” policies and a wood stork protocol during construction. Southern will limit construction of the proposed pipeline in areas where RCWs are known to occur to periods outside of the species nesting season and will avoid the take of any suitable foraging habitat this species requires.

Southern believes that operation under the reasonable and prudent measures set forth herein will minimize or eliminate long-term adverse impacts to sensitive species during construction and operation of the proposed Cypress Project.

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7.0 QUALIFICATIONS OF PRINCIPAL INVESTIGATORS

DAVID P. THOMAS

Mr. Thomas graduated *magna cum laude* with a Bachelor of Science Degree in Biology from David Lipscomb University. He received his Master's Degree in Zoology from Auburn University, where he worked with endangered gray bats (*Myotis grisescens*). He has over 12 years experience in fieldwork specialties, including wetland delineation, wildlife habitat assessment, and biological assessment for threatened and endangered species. He began working with gopher tortoises (*Gopherus polyphemus*) while a graduate student, and has worked on several large projects involving gopher tortoises, including comprehensive surveys of Camp Shelby Military Base and priority soils in DeSoto National Forest, Mississippi. He was field supervisor for the Florida Gas Phase III Expansion Project, which involved the capture and temporary displacement of more than 2,500 gopher tortoises prior to construction. He managed the Destin Pipeline Gopher Tortoise Project, which involved the removal of federally protected tortoises from the project right-of-way. He obtained all necessary state and federal permits and worked closely with the regulatory agencies through all phases of the project. He authored significant portions of the Environmental Survey and Biological Field Survey reports for this project, and designed a workable mitigation plan to relocate tortoises from the right-of-way during construction. He also authored technical reports required for the Destin Project, including the Gopher Tortoise (*Gopherus polyphemus*) Relocation for the Construction of the Destin Pipeline Project Final Report. A summary of the results of this work was presented at the proceedings of the 7th International Symposium on Environmental Concerns in Right-of-Way Management in Calgary, Canada in September 2000, published in 2001. He has since worked on several other projects involving gopher tortoises, including the Gulfstream Natural Gas System, the Petal Gas Pipeline, and Petal Gas Storage Facility. He is the author of several papers involving gopher tortoise conservation.

CAMERON A. YOUNG

Mr. Young received a BA in Biology from Earlham College in Richmond, Indiana. At the time that he conducted surveys for the Cypress Project he had over 7 years experience conducting threatened and endangered species surveys throughout the country. As an ecologist for several environmental consulting firms, his experience includes listed species surveys, wetland assessment, water sampling, and timber surveys. He has also assisted as a team member with other professionals in the development of habitat and wildlife management plans for local, state, and federal governments. These surveys have involved the use of many techniques, such as field identification of plants and animals, gopher tortoise transects, meandering upland transects, water quality sampling, wetland rapid assessment procedure (WRAP), helicopter surveys, drift fences, and funnel trapping. His extensive field experience in Florida, Georgia, Indiana, Nebraska, Arkansas, South Carolina, Alabama, Mississippi, and Kenya, East Africa, have given him valuable tools for evaluating ecosystems and their associated wildlife. He also has expertise in the natural history and habitats of southeastern United States wildlife. Mr. Young is currently working on an advanced degree in Ecology at the University of Georgia.

ALLEN R. JACKS

Mr. Jacks earned a Master of Science in Ecology from the University of West Florida in Pensacola, Florida and a Bachelors of Science in biology from Georgia College and State University in Milledgeville, Georgia. At the time of the Cypress Project surveys in 2005, Mr. Jacks had over 8 years of experience in natural resources and environmental science. Mr. Jacks has worked with endangered species and wildlife monitoring programs at Gulf Islands National Seashore (Pensacola, Florida), Sarasota

County Government and Mote Marine Laboratory in Sarasota, Florida. He developed a sea turtle monitoring programs at Tybee Island Marine Science Center, at which he was the Executive Director. He has several reports and presentations to his credit concerning sea turtle biology and ecology. His work at ENSR International includes conducting environmental surveys for wetlands, waterbodies, and threatened and endangered species, as well as GPS operation and technical report writing.

APPENDIX A
SENSITIVE SPECIES LOCATION MAPS