

# THREATENED AND ENDANGERED SPECIES REPORT

FINAL

I-12 to Bush Environmental Impact Statement  
USACE Permit No. MVN-2006-0037



*Prepared for*

United States Army Corps of Engineers, New Orleans District

and

Louisiana Department of Transportation and Development

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of Engineers®  
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## **SECTION 1.0 STUDY OVERVIEW**

### **1.1 INTRODUCTION**

This report presents the findings of the Threatened and Endangered (T&E) Species study conducted for the Louisiana Department of Transportation and Development (LADOTD) proposed construction of “Louisiana Highway (LA) 3241” from the LA 40/41 intersection in Bush, Louisiana to Interstate 12 (I-12). This study was conducted as part of the U.S. Army Corps of Engineers (USACE), New Orleans District environmental impact statement (EIS) to evaluate the potential environmental and socioeconomic consequences of the proposed project. Information provided in this report will be used by the USACE as part of the permit decision-making process.

LA 21 is a four-lane divided highway between the city of Bogalusa, in Washington Parish, and Bush, in St. Tammany Parish, ending at its intersection with LA 41. The proposed I-12 to Bush highway would extend the four-lane section from that point to an existing interchange on I-12 by 4-laning an existing highway or construction of a new alignment with a maximum right-of-way (ROW) width of 250 feet. Four alignment alternatives (Alternatives B/O, J, P, and Q) have been identified as meeting the purpose and need of the project, and are further defined in Section 1.3.

The specific objectives of this study are to: list federal and state T&E plant and animal species with known records of occurrence in the project area; identify their habitat requirements; and describe the distribution of these T&E species and their habitat presently occurring within the proposed ROW and vicinity of the four alignment alternatives. T&E species include federal candidate species for proposed listing and state species of concern.

### **1.2 ENDANGERED SPECIES ACT**

The Endangered Species Act (ESA) was passed in 1973 to protect and recover imperiled species and the ecosystems on which they depend. Together, the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) manage the ESA. The USFWS is responsible for administering protection and recovery for terrestrial and freshwater organisms, and the NMFS is responsible for non-bird marine organisms (USFWS 2009).

Under the ESA, species may be listed as endangered or threatened. An *endangered* species is one in danger of extinction throughout all or a significant portion of its range. A *threatened* species has a high probability of becoming endangered in the near future throughout all or a significant portion of its range. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened. The ESA protects threatened and endangered species and their habitats by prohibiting the *take* of a listed species (USFWS 2009).

Take is defined as, “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” The term *harm* includes significant habitat modification or degradation by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Plants are not restricted from take but collection and malicious harm is prohibited on federal land (USFWS 2009).

### **1.3 PROJECT AREA**

The project area is wholly contained within St. Tammany Parish, Louisiana, and roughly bounded by LA 21, U.S. Highway (US) 190, I-12, US 11, and LA 41 (Figure 1-1). It encompasses an area of approximately 245 square miles and includes the incorporated areas of Abita Springs, Pearl River, and portions of the cities of Slidell and Covington. The unincorporated areas of Bush, Hickory, Talisheek, and Waldheim are in the project area.

Based on a screening analysis and evaluation, four alternative alignments (Alternatives B/O, J, P, and Q) were selected for detailed analysis in the EIS (Figure 1-2). Descriptions of each of the alternative alignments are provided below.

#### **1.3.1 Alternative B/O**

Alternative B/O would widen LA 21 to a 4-lane highway from Bush to just north of Waldheim, then continue as a new 4-lane roadway about halfway between Alternatives B and O before capturing Alternative O just north of LA 435, terminating at LA 1088 near I-12. This alternative would be approximately 19.19 miles long, with 6.4 miles on existing alignment and 13.6 miles on new alignment.

#### **1.3.2 Alternative J**

Alternative J would be new construction of a 4-lane highway following the abandoned railroad corridor from Bush to a point due north of the Slidell Municipal Airport. From this point, the proposed route would connect to Airport Road, which ties into I-12 at an existing interchange (Exit 80). This proposed route would be approximately 21.8 miles long, with 16.6 miles using the abandoned railroad embankment, 2.9 miles on new alignment, and 1.5 miles of existing roadway.

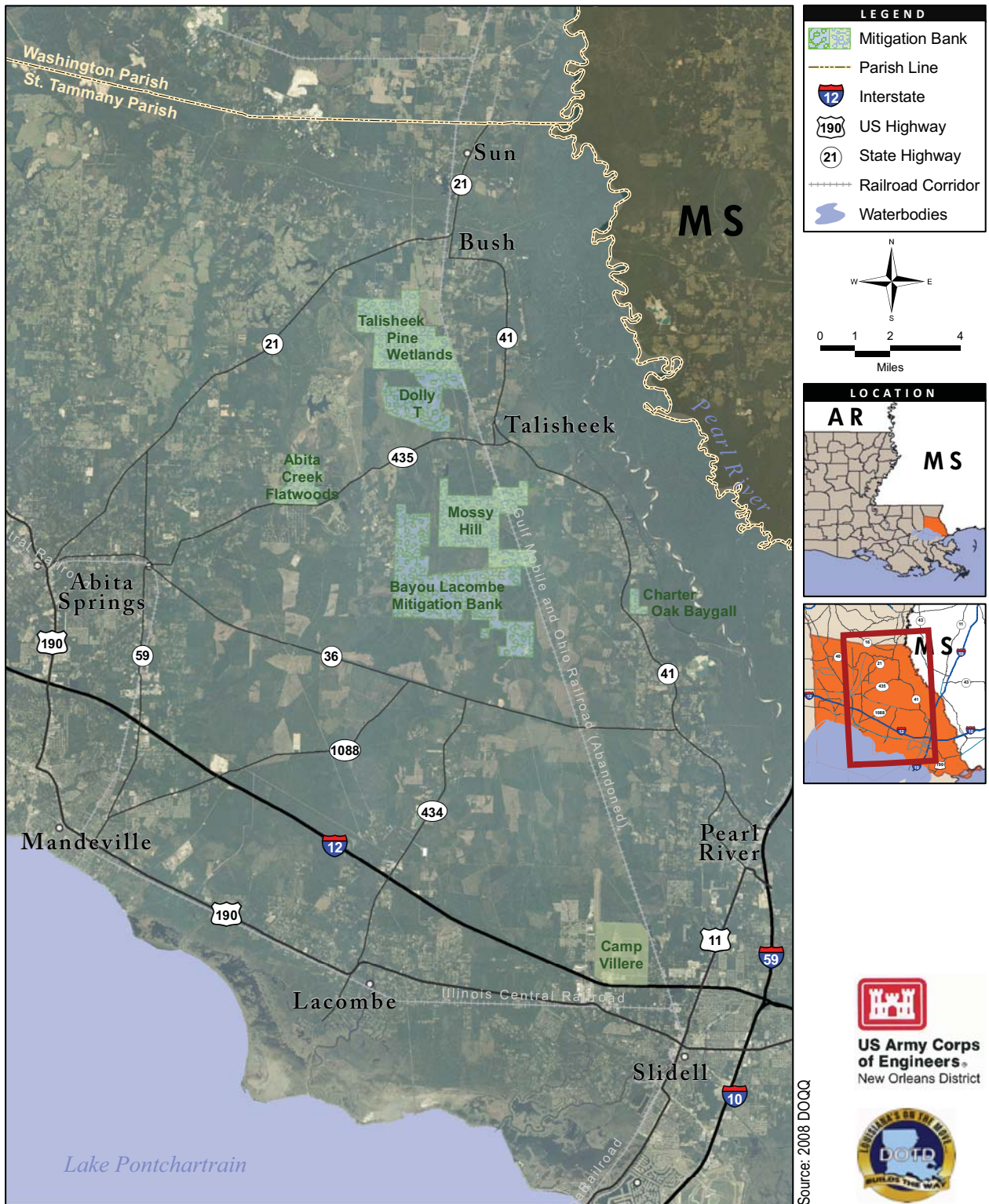
#### **1.3.3 Alternative P**

Alternative P would begin at the intersection of LA 41 and LA 40 in Bush and proceed southward for approximately 17.4 miles to LA 1088. The proposed route utilizes an abandoned railroad corridor from Bush to Talisheek, a distance of approximately 4.0 miles, before turning southwesterly for approximately 13.4 miles on a new alignment to connect with LA 1088 north of I-12.

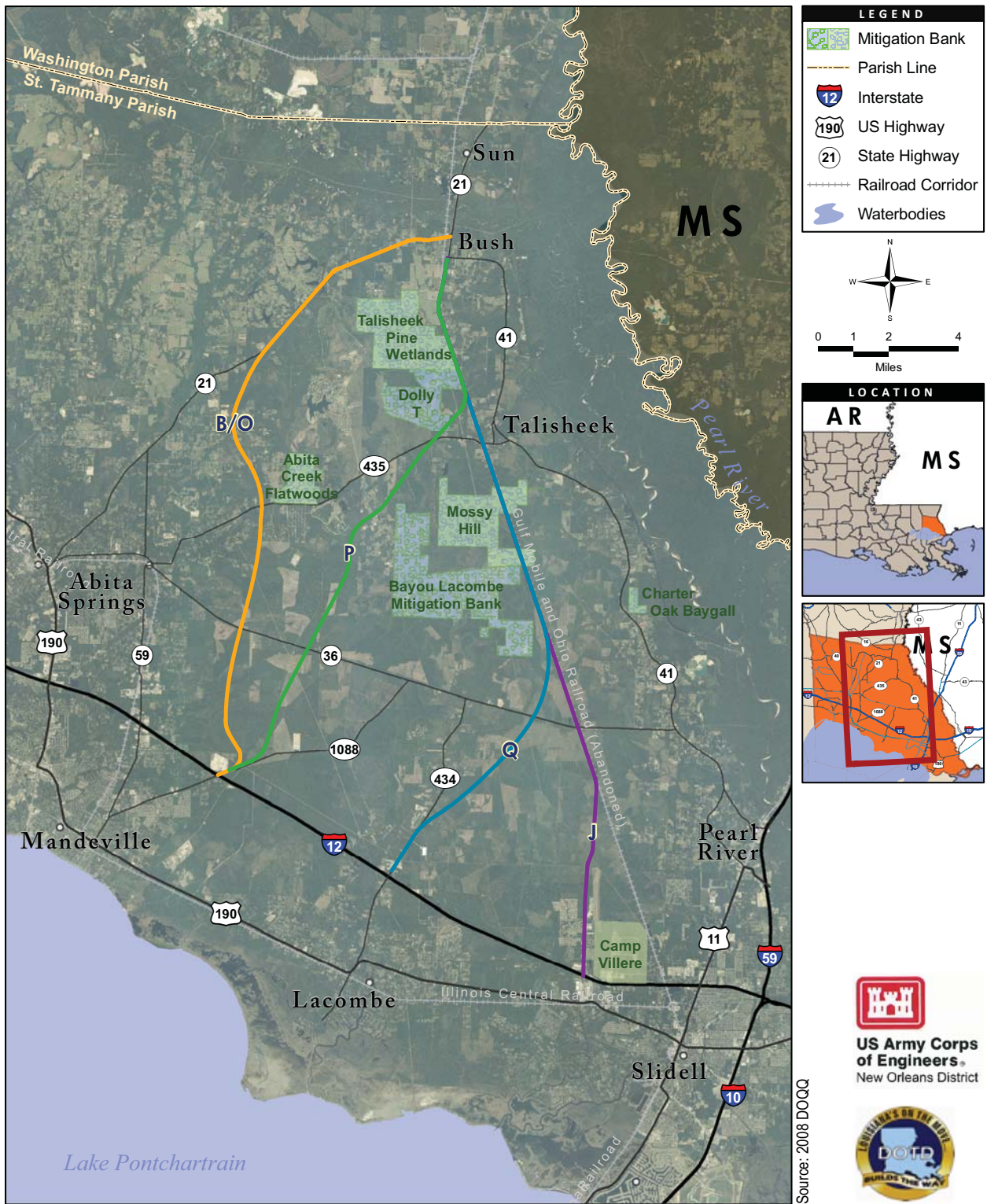
#### **1.3.4 Alternative Q**

Alternative Q would include new construction of a 4-lane highway following the abandoned railroad corridor from Bush to a point approximately 1.7 miles north of LA 36. From this point, the proposed route would leave the railroad corridor and connect to LA 434, which ties into I-12 at an existing interchange (Exit 74). This alternative would be approximately 20 miles long, with 12.3 miles using the abandoned railroad embankment, 5.4 miles on new alignment, and 2.3 miles on existing roadway.

**Figure 1-1 General Site Location**



**Figure 1-2 Alternative Alignments Evaluated**





## **SECTION 2.0 METHODOLOGY**

### **2.1 REVIEW OF EXISTING INFORMATION**

A listing of T&E species with known records of occurrence, or potential occurrence, within the project area, their federal or state status, their global and state ranks, their habitat requirements, and locations of known occurrence was prepared based on a review of existing information sources and correspondence and contacts with the Louisiana Department of Wildlife and Fisheries (LDWF) and USFWS. Key sources of information included, but were not limited to, the following:

- Louisiana Natural Heritage Program (LNHP) on-line database for protected species and species of concern in St. Tammany Parish (Table 2-1),
- Correspondence with the LDWF, Habitat Section,
- USFWS Threatened and Endangered Species System (TESS), an on-line database providing lists of federally protected species and associated listing information, critical habitat designation, and recovery plans (USFWS 2010a),
- USFWS correspondence identifying federally-listed T&E species potentially occurring in the project area (USFWS 2008) (Table 2-2),
- USFWS recovery plans for listed T&E species found in St. Tammany Parish, and
- Previous T&E surveys conducted within the project area (Neel-Schaffer 2007).

T&E species with known records of occurrence, or potential occurrence, within the project area are discussed in Section 3, with respect to their historic and present distributions, their habitat use, and potential availability of such habitats in the study area as observed during the field reconnaissance surveys.

### **2.2 FIELD RECONNAISSANCE SURVEYS**

A field reconnaissance survey for each of the four alternative alignments was conducted during the spring and summer of 2010 to observe representative terrestrial, wetland, and riparian habitats and to identify potential suitable habitats for T&E plant and wildlife species. Tetra Tech biologists conducted pedestrian surveys for the entire length of each alternative alignment, with a 250-foot ROW, on the following dates:

- Alternative B/O – September 14-22, 2010
- Alternative J – May 5-6, 2010
- Alternative P – March 15-19, 2010 and April 15-16, 2010
- Alternative Q – April 15-16 and 29, 2010

Field notes were recorded and digital photographs were taken of potential T&E habitat. If observed, locations of identified T&E species were recorded using a GPS. Follow-up surveys of locations identified as potential suitable foraging and/or nesting habitat for gopher tortoise and red-cockaded woodpecker were conducted on February 9 and 15, 2011. See Appendices C and D

for detailed information regarding the field surveys. Survey methodology followed the USFWS guidelines as specified in their 2008 scoping comment letter (USFWS 2008).

**Table 2-1  
Species of concern in St. Tammany Parish**

Common name	Scientific name	State Rank	Global Rank	State Status	Federal Status
Alabama shad	<i>Alosa alabamae</i>	S1	G3	-	C
Bald eagle	<i>Haliaeetus leucocephalus</i>	S2N, S3B	G5	Endangered	Delisted
Eastern tiger salamander	<i>Ambystoma tigrinum</i>	S1	G5	Prohibited	PS
Louisiana quillwort	<i>Isoetes louisianensis</i>	S2	G2	-	LE
Gopher tortoise	<i>Gopherus polyphemus</i>	S1	G3	Threatened	PS:LT
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>	S1S2	G3	Threatened	LT
Inflated heelsplitter	<i>Potamilus inflatus</i>	S1	G1G2	Threatened	LT
Louisiana black bear	<i>Ursus americanus luteolus</i>	S2	G5	Threatened	LT
West Indian manatee	<i>Trichechus manatus</i>	SZN	G2	Endangered	LE
Red-cockaded woodpecker	<i>Picoides borealis</i>	S2	G3	Endangered	LE
Ringed map turtle	<i>Graptemys oculifera</i>	S2	G2	Threatened	LT

Source: LNHP 2008

**State Ranks:**

S1 – critically imperiled in Louisiana because of extreme rarity (5 or fewer known extant populations) or because some factor(s) making it especially vulnerable to extirpation

S2 – imperiled in Louisiana because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extirpation

S3 – rare and local throughout the state or found locally (even abundantly at some of its locations) in a restricted region of the state, or because of other factors making it vulnerable to extirpation (21 to 100 known extant populations)

SZ – transient species in which no specific consistent area of occurrence is identifiable

B – breeding population

N – non-breeding population

**Global Ranks:**

G1 – critically imperiled globally because of extreme rarity (5 or fewer known extant populations) or because some factor(s) making it especially vulnerable to extinction

G2 – imperiled globally because of rarity (6 to 20 known extant populations) or because some factor(s) making it very vulnerable to extinction throughout its range

G3 – either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range or because of other factors making it vulnerable to extinction throughout its range (21 to 100 known extant populations)

G5 – demonstrably secure globally, although it may be quite rare in parts of its range, especially at the periphery (1000+ known extant populations)

**State Status:**

Endangered – taking or harassment of these species is a violation of state and federal laws

Threatened – taking or harassment of these species is a violation of state and federal laws

Prohibited – possession of these species is prohibited. No legal harvest or possession

**Federal Status:**

C – candidate

LE – listed endangered

LT – listed threatened

PS – partial status = status in only a portion of the species' range

**Table 2-2**  
**Federally listed species of potential occurrence in the project area**

<b>Common/scientific name</b>	<b>Status</b>	<b>Date listed</b>	<b>Parish</b>	<b>Habitat</b>
<b>Plants</b>				
Louisiana quillwort ( <i>Isoetes louisianensis</i> )	E	1992	St. Tammany, Washington	Sand and gravel bars on accreting riverbends
<b>Reptiles</b>				
Gopher tortoise ( <i>Gopherus polyphemus</i> )	T	1987	Washington	Pipeline and powerline rights- of-way
Ringed map turtle ( <i>Graptemys oculifera</i> )	T	1986	St. Tammany, Washington	Moderate current rivers, clear water w/ logs & sandy banks
<b>Birds</b>				
Red-cockaded woodpecker ( <i>Picoides borealis</i> )	E	1970	St. Tammany, Washington	Open, park-like mature stands of pine trees with open understory

Source: USFWS 2008

Notes: E – endangered, T – threatened

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## **SECTION 3.0 PROTECTED SPECIES**

According to the USFWS TESS database, four federally-listed threatened species and three federally-listed endangered species occur within St. Tammany Parish. The threatened species are as follows: gopher tortoise (*Gopherus polyphemus*), ringed map turtle (*Graptemys oculifera*), Alabama heelsplitter (*Potamilus inflatus*), and gulf sturgeon (*Acipenser oxyrinchus desotoi*). The endangered species are as follows: Louisiana quillwort (*Isoetes louisianensis*), red-cockaded woodpecker (*Picoides borealis*), and West Indian manatee (*Trichechus manatus*). Four of these T&E species were identified by the USFWS as occurring within the project area: Louisiana quillwort, gopher tortoise, ringed map turtle, and red-cockaded woodpecker (USFWS 2008).

LNHP maintains a database of rare, threatened, and endangered species of plants, animals, and natural communities in Louisiana. Those species might not coincide with the federal list of T&E species, but they do represent those that could be in jeopardy, with known or perceived threats, or population declines. The LNHP database identified the location of species of special concern within the project area, which includes two bird species, thirteen reptiles, seven amphibians, two fish, ten invertebrates, and two hundred twenty-five plants (LNHP 2008). A complete list of species identified in St. Tammany Parish with their corresponding state and global ranking and state and federal status is included in Appendix A (LNHP 2008). Figure 3-1 illustrates the potential locations of T&E species or their potential habitat in the project area.

The following sections evaluate the presence or potential use of habitats within the project area by species listed as federally protected.

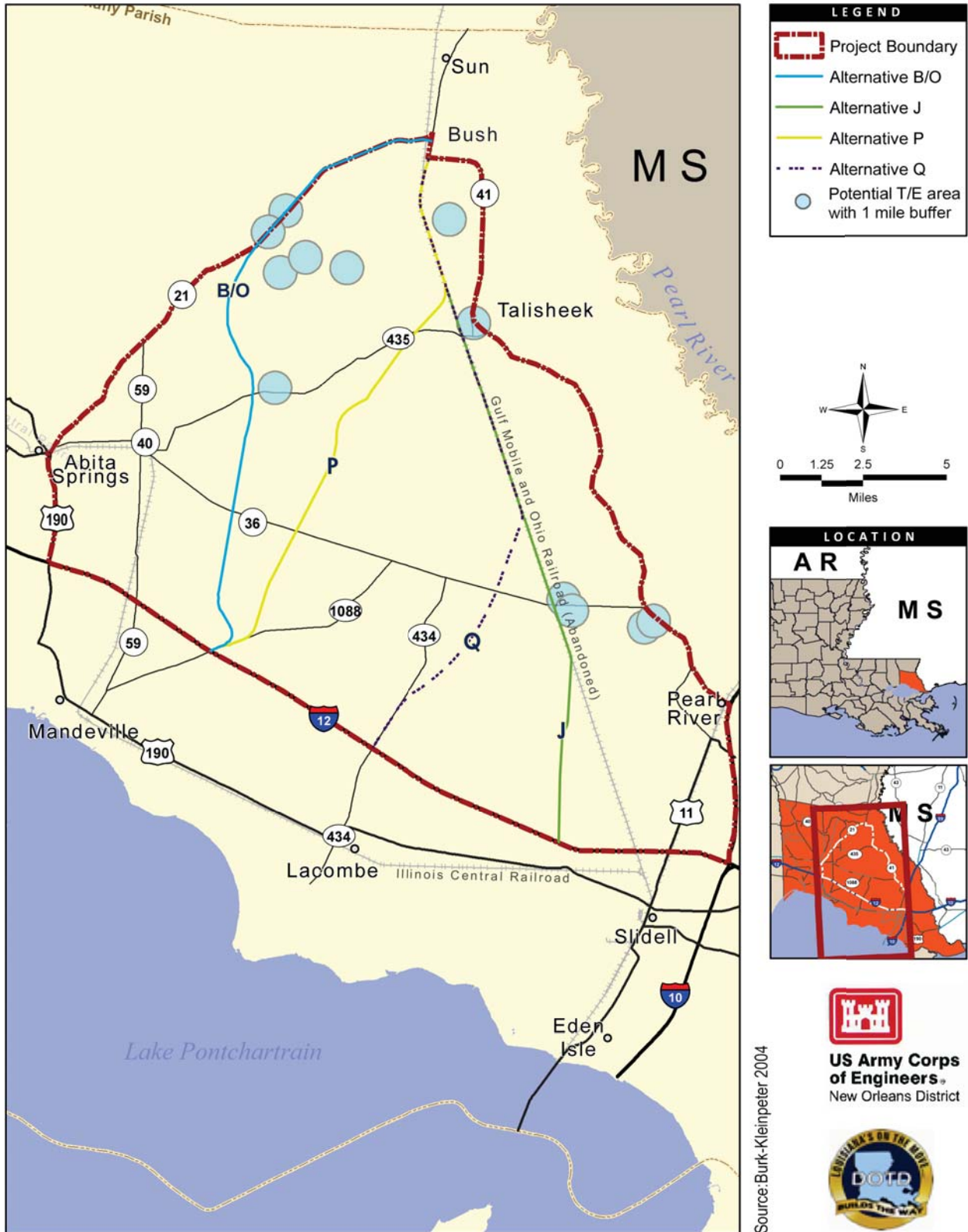
### **3.1 LOUISIANA QUILLWORT**

The Louisiana quillwort, federally listed as endangered, is known to occur in St. Tammany and Washington Parishes in southeastern Louisiana (USFWS 1996), 10 counties in Mississippi, and 2 counties in Alabama (USFWS 2008). The Louisiana quillwort grows on sand and gravel bars on the accreting sides of blackwater streams and overflow channels in riparian and bayhead forests of pine flatwoods and upland longleaf pine communities (USFWS 1996).

The Louisiana quillwort is included in the family of primitive, seedless plants related to ferns (USFWS 1996). It is a small, semi-aquatic facultative evergreen plant with spirally arranged leaves (sporophylls) arising from a globose, two-lobed corm. The flexible hollow leaves are transversely septate and measure approximately 0.12 inch wide and 16 inches long.

Major threats to the species are habitat loss through hydrologic modifications of stream habitat and land use practices that significantly alter stream water quality and hydrology. The Louisiana quillwort appears to be dependent on a special hydrologic regime resulting from the presence of small springs scattered at the base of banks or bluffs. The plant's survival could be directly or indirectly affected by construction activities that destroy their colonies or reduce their habitat via water quality degradation or changes in stream morphology (USFWS 2008).

**Figure 3-1 Federally Listed T&E Species of Potential Occurrence**



According to the 1996 USFWS Recovery Plan for the Louisiana quillwort, the species has been identified in four locations in the Tchefuncte River watershed in St. Tammany Parish (USFWS 1996). More than 1,500 plants were observed along a 0.6-mile section of a tributary to the Bogue Falaya, and 50 plants were identified at Little Bogue Falaya River southeast of Barkers Corner.

In the Abita River drainage basin, approximately 400 plants were identified along a 0.3-mile section of Abita Creek, 18 plants at a site on Coon Creek, and 2 additional at Ten-Mile Creek. Another area was identified at Bayou Chinchuba, which drains directly to Lake Pontchartrain (USFWS 1996), but that area is outside the project boundary.

Louisiana quillwort was not observed during any of the field surveys. No critical habitat has been identified for Louisiana quillwort within the 250-ft ROW, or vicinity of, any of the alternative alignments, but appropriate habitat exists in the project area. The alternative alignments were designed to avoid sensitive aquatic habitats (i.e. Bayou Lacombe).

### **3.2 GOPHER TORTOISE**

The gopher tortoise is a federally listed threatened species known to inhabit the Ben's Creek Wildlife Management Area in Washington Parish and pipeline and powerline ROWs. The species is associated with areas that have well-drained, sand or gravel soils appropriate for burrow establishment, ample sunlight for nesting, and understory vegetation suitable for foraging (i.e., grasses and forbs). Gopher tortoises prefer an open longleaf pine-scrub oak community that is thinned and burned every few years (USFWS 2008). It is also possible that the species could use cleared right-of-ways (i.e. powerlines) as potential habitat.

The gopher tortoise is a dark-brown to grayish-black terrestrial turtle with elephantine hind feet, shovel-like forefeet, and the front of the shell projects out under the throat. The shell of an adult tortoise is approximately 5.9 to 14.6 inches long. Gopher tortoise hatchlings are yellowish-orange with a soft shell and are 1.5 to 2 inches long at hatching (USFWS 1990).

The gopher tortoise is the only native tortoise found in the southeastern United States. Historically, the population was identified in the longleaf pine hills of northern Mobile, Washington, and southeastern Choctaw Counties in Alabama, in 14 counties in southeastern upland area of Mississippi, and in the southeastern upland ridges in St. Tammany, Washington, and Tangipahoa Parishes in Louisiana (USFWS 1990). Habitat degradation through fire suppression and land conversion to agriculture or urbanization have contributed to the decline of the species. Habitat decline has generally concentrated the remaining gopher tortoise population along pipeline and power line rights-of-way within their range in Louisiana.

Gopher tortoise and burrows were not observed during any of the field surveys. No critical habitat has been identified for gopher tortoise within the 250-ft ROW, or vicinity of, any of the alternative alignments, but appropriate habitat exists in the project area. In 2001, the U.S. Environmental Protection Agency (USEPA) Endangered Species Protection Program identified two locations of potential gopher tortoise critical habitat (USEPA 2001) (Figure 3-2). Detailed surveys of these two areas were performed in February 2011, but did not identify critical habitat or observation of gopher tortoise or burrows. Details of the survey are provided in Appendix C.

**Figure 3-2 Potential Critical Habitat for Gopher Tortoise & Ringed Map Turtle**





### **3.3 RINGED MAP TURTLE**

The federally-listed threatened ringed map turtle, also known as the ringed sawback turtle, is endemic to the Pearl River system. In Louisiana, it inhabits the Bogue Chitto River south of Franklinton, and the Pearl River north of LA 190 in St. Tammany and Washington Parishes. The shell of the adult turtle is curved with spine-like projections and range in color from light olive to dark green. The head is dark brown to black with yellow stripes with a prominent yellow bar on the chin that extends to the back of the jaw. The spines on the shell are black and typically flanked by curved yellow or orange bars. Ringed map male turtles are approximately 4.2 inches long while females are significantly larger and can be up to 8.5 inches long (Jones 2009).

The ringed map turtle is found in riverine habitats with moderate currents, channels wide enough to permit sunlight penetration for several hours each day, numerous logs for basking, and large sandy banks. Nesting typically occurs on sandbars from May to July where 1 to 10 eggs are laid (Jones 2009). Habitat loss through water quality degradation, damage and destruction of exposed sandbars and basking areas has contributed to the decline of this species (USFWS 2008). As of 2010, a habitat recovery plan had not been completed for the ringed map turtle.

Ringed map turtle was not observed during any of the field surveys. No critical habitat has been identified for the ringed map turtle within the 250-ft ROW, or vicinity of, any of the alternative alignments. The alternative alignments were designed to avoid sensitive aquatic habitats (i.e. Bayou Lacombe). The nearest identified habitat, located in the vicinity of the Bogue Chitto River, is outside of the project area (NatureServe 2009). In 2001, the EPA Endangered Species Protection Program identified the Bogue Chitto River and Pearl River as areas of potential ringed map turtle critical habitat (USEPA 2001) (Figure 3-2).

### **3.4 RED-COCKADED WOODPECKER**

The red-cockaded woodpecker is a federally listed endangered species endemic to open, mature and old-growth pine ecosystems in the southeastern United States. Most recent counts estimate that 14,068 red-cockaded woodpeckers live in 5,627 known active clusters across 11 states (USFWS 2003). The red-cockaded woodpecker is widely distributed but considered local throughout the southeastern coastal states from eastern Texas to southern Maryland including Arkansas, Tennessee, Kentucky, and Oklahoma. Today fewer than 400 known active colonies remain in Louisiana, and nearly all colonies are in the four districts of the Kisatchie National Forest, none of which are located in St. Tammany Parish (LDWF 2004).

Red-cockaded woodpeckers are relatively small adults measuring 7.8 to 9 inches, weighing 1.4 to 1.9 ounces, and are slender, long-tailed, and small-billed. They are black and white with a coarsely barred back, black crown, while their breast and bellies are white to grayish-white with spots on their sides changing to bars on the flanks (Chadwick 2005). They are distinguishable from other ladder-back woodpeckers because of their all-white cheek pattern and cooperative breeding strategy (LDWF 2005). Their outer tail feathers are white with black bars, and the central tail feathers are black. Adult plumage is similar between sexes, with the exception of a red cockade, or splotch, on the upper edge of the white auriculars on males. Those characteristics can be difficult to distinguish in the field (Chadwick 2005).

Red-cockaded woodpeckers are a cooperatively breeding species, living in family groups that typically consist of a breeding pair with one or two male helpers. Cooperative habitation is highly dependent on the availability of live pines with cavities, with longleaf pine being the preferred tree species because of its ability to produce resin long term (USFWS 2003). Red-cockaded woodpeckers are considered a keystone species for southern pine forests by creating cavities that will be abandoned and then inhabited by any of almost 30 species living in the forest (USFWS 2010b).

The red-cockaded woodpecker nests in open, park-like stands of mature (i.e., older than 60 years) pine trees containing little hardwood understory or midstory. The woodpeckers can tolerate small numbers of overstory hardwood or large midstory hardwood trees at low densities found naturally in many southern pine forests, but they are not tolerant of dense hardwood midstories resulting from fire suppression. A cluster is a set of cavity trees and foraging area within 200 feet of those trees. Ideal foraging habitat is defined as pine and pine-dominant pine-hardwood stands older than 30 years continuous to and within one-half mile of a cluster (CEMVN 2008). Clusters are needed for colonies to nest and forage successfully.

In 2006, field surveys were conducted along the proposed Alternative P alignment and suitable foraging habitat was identified for the red-cockaded woodpecker; however no known cavity trees exist near Alternative P and no red-cockaded woodpeckers were observed (Neel-Schaffer, Inc. 2007).

During field surveys of the proposed alternative alignments in March, April, May, and September 2010, red-cockaded woodpeckers and known cavity trees were not observed within the 250-ft ROW, or vicinity of, any of the alternative alignments. Potential suitable habitat was observed in the vicinity of the ROW in one location along Alternative B/O, two locations along Alternative P, one location along Alternative Q, and one location along Alternative J (Figure 3-3). Examples of potential suitable habitat located along the Alternative P alignment are provided in Figures 3-4 and 3-5. These examples are representative of the potential suitable habitat along the other three alignments.

Detailed surveys of potential suitable habitat were performed in February 2011. The locations along Alternatives B/O, J and Q did not support suitable foraging or nesting habitat. One location along the northern portion of Alternative P was observed to have suitable foraging habitat, but no suitable nesting habitat. One location along the southern portion of Alternative P was observed to have suitable nesting and foraging habitat, but no cavities formed by red-cockaded woodpeckers. Details of the survey are provided in Appendix D.

**Figure 3-3 Potential Red-Cockaded Woodpecker Habitat**





**Figure 3-4. Example of potential suitable habitat for red-cockaded woodpecker**



**Figure 3-5. Example of potential suitable habitat for red-cockaded woodpecker**

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## **SECTION 4.0**

### **SUMMARY AND CONCLUSIONS**

During field surveys of the four proposed alternative alignments in March, April, May, and September 2010 and February 2011, the four federally-listed T&E species identified by the USFWS were not observed within the 250-ft ROW, or vicinity of, any of the alternative alignments. Potential habitat for the Louisiana quillwort and ringed map turtle were not observed for any of the alignments, as the alignments were designed to avoid sensitive aquatic habitats. Detailed gopher tortoise field surveys of two areas identified by USEPA did not identify critical habitat or observation of gopher tortoise or burrows.

Detailed red-cockaded woodpecker field surveys did not identify suitable nesting or foraging habitat along Alternatives B/O, J, or Q. One location along the northern portion of Alternative P was observed to have suitable foraging habitat, but no suitable nesting habitat. One location along the southern portion of Alternative P was observed to have suitable nesting and foraging habitat, but no cavities formed by red-cockaded woodpeckers.

Based on these findings, implementation of any of the alternative alignments would not be expected to directly impact any federally-listed T&E species or critical habitat in the project area.

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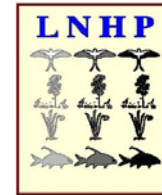
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**Appendix A**  
**LNHP List of Threatened and Endangered Species in**  
**St. Tammany Parish**

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Rare, Threatened, & Endangered Species & Natural Communities  
 Tracked by the Louisiana Natural Heritage Program  
 St. Tammany Parish - April 2008

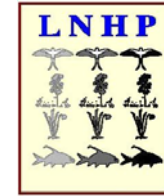


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<a href="#"><i>Acipenser oxyrinchus desotoi</i></a>	Gulf Sturgeon	S1S2	G3T2	Threatened	LT
<a href="#"><i>Agalinis aphylla</i></a>	Coastal Plain False-foxglove	S1	G3G4		
<a href="#"><i>Agalinis filicaulis</i></a>	Purple False-foxglove	S2	G3G4		
<a href="#"><i>Agalinis linifolia</i></a>	Flax-leaf False-foxglove	S2	G4?		
<a href="#"><i>Aimophila aestivalis</i></a>	Bachman's Sparrow	S3	G3		
<i>Alosa alabamae</i>	Alabama Shad	S1	G3		C
<i>Ambystoma tigrinum</i>	Eastern Tiger Salamander	S1	G5	Prohibited	PS
<i>Asclepias michauxii</i>	Michaux Milkweed	S2	G4G5		
<a href="#"><i>Bayhead swamp</i></a>	Bayhead Swamp	S3	G3?		
<a href="#"><i>Bottomland hardwood forest</i></a>	Bottomland Hardwood Forest	S4	G4G5		
<i>Burmannia biflora</i>	Northern Burmannia	S3	G4G5		
<a href="#"><i>Calopogon barbatus</i></a>	Bearded Grass-pink	S1	G4?		
<a href="#"><i>Calopogon multiflorus</i></a>	Many-flowered Grass-pink	S1	G2G3		
<i>Calopogon pallidus</i>	Pale Grass-pink	S2	G4G5		
<a href="#"><i>Carex decomposita</i></a>	Cypress-knee Sedge	S3	G3		
<i>Carex turgescens</i>	Pine barren sedge	S1S2	G4G5		
<i>Carex venusta</i>	Caric Sedge	S1	G4		
<a href="#"><i>Chamaelirium luteum</i></a>	Fairy Wand	S2S3	G5		
<a href="#"><i>Chasmanthium ornithorhynchum</i></a>	Bird-bill Spikegrass	S2	G4		
<i>Chrysopsis gossypina ssp. hyssopifolia</i>	A Golden Aster	S1	G5T3T5		
<a href="#"><i>Cirsium lecontei</i></a>	Lecont's Thistle	S2	G2G3		
<i>Cleistes divaricata</i>	Spreading Pogonia	S1	G4		
<i>Cliftonia monophylla</i>	Buckwheat-tree	S1	G4G5		
<a href="#"><i>Coastal live oak-hackberry forest</i></a>	Coastal Live Oak-hackberry Forest	S1S2	G2		
<a href="#"><i>Collinsonia canadensis</i></a>	richweed	S2?	G5		
<a href="#"><i>Collinsonia serotina</i></a>	southern horse-balm	S1	G3G4		
<a href="#"><i>Coreopsis nudata</i></a>	Georgia Tickseed	S2	G3?		



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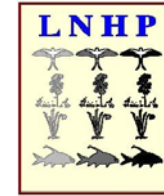


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Crystallaria asprella</i>	Crystal Darter	S2S3	G3		
<i>Cycleptus meridionalis</i>	Southeastern Blue Sucker	S1	G3G4		
<a href="#"><u>Cypress-tupelo swamp</u></a>	Cypress-tupelo Swamp	S4	G3G5		
<i>Deparia acrostichoides</i>	Silvery Glade Fern	S2	G5		
<i>Dichanthelium strigosum</i> var. <i>glabrescens</i>	roughhair witchgrass	SH	GNR		
<i>Drosera intermedia</i>	Spoon-leaved Sundew	S2	G5		
<i>Dulichium arundinaceum</i>	Three-way Sedge	S2	G5		
<a href="#"><u>Eastern hillside seepage bog</u></a>	Eastern Hillside Seepage Bog	S2	G2		
<a href="#"><u>Eastern longleaf pine savannah</u></a>	Eastern Longleaf Pine Savannah	S1	G1		
<a href="#"><u>Eastern upland longleaf pine forest</u></a>	Eastern Upland Longleaf Pine Forest	S1S2	G1G2		
<a href="#"><u>Elanoides forficatus</u></a>	American Swallow-tailed Kite	S1S2B	G5		
<a href="#"><u>Eleocharis elongata</u></a>	Slim Spike-rush	S3	G5?		
<i>Eleocharis fallax</i>	Creeping Spike-rush	S1?	G4G5		
<i>Elliptio crassidens</i>	Elephant-ear	S2S3	G5		
<a href="#"><u>Fallicambarus oryktes</u></a>	Flatwoods Digger	S2S3	G4		
<a href="#"><u>Farancia erythrogramma</u></a>	Rainbow Snake	S2	G4		
<a href="#"><u>Freshwater marsh</u></a>	Freshwater Marsh	S1S2	G3G4		
<a href="#"><u>Fuirena scirpoidea</u></a>	Southern Umbrella-sedge	S1	G5		
<i>Fuirena simplex</i>	Western Umbrella-grass	SU	G5		
<i>Fusconaia ebena</i>	Ebonysell	S3	G4G5		
<a href="#"><u>Gopherus polyphemus</u></a>	Gopher Tortoise	S1	G3	Threatened	PS:LT
<i>Graptemys gibbonsi</i>	Pascagoula Map Turtle	S3	G3G4		
<a href="#"><u>Graptemys oculifera</u></a>	Ringed Map Turtle	S2	G2	Threatened	LT
<i>Gratiola ramosa</i>	Hedgehyssop	S1S2	G4G5		
<a href="#"><u>Haliaeetus leucocephalus</u></a>	Bald Eagle	S2N,S3B	G5	Endangered	Delisted
<a href="#"><u>Hardwood slope forest</u></a>	Hardwood Slope Forest	S3S4	G2G3		
<a href="#"><u>Helenium brevifolium</u></a>	Shortleaf Sneezeweed	S1	G3G4		



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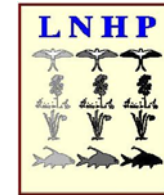


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<a href="#"><i>Hemidactylum scutatum</i></a>	Four-toed Salamander	S1	G5		
<a href="#"><i>Ilex amelanchier</i></a>	Sarvis Holly	S2	G4		
<a href="#"><i>Ilex myrtifolia</i></a>	Myrtle Holly	S2	G5?		
<a href="#"><i>Intermediate marsh</i></a>	Intermediate Marsh	S3S4	G4?		
<a href="#"><i>Isoetes louisianensis</i></a>	Louisiana Quillwort	S2	G2		LE
<i>Isotria verticillata</i>	Large Whorled Pogonia	S3	G5		
<a href="#"><i>Justicia americana</i></a>	Common Water-willow	S2	G5		
<i>Lachnanthes caroliniana</i>	Carolina Redroot	S2	G4		
<i>Lachnocaulon digynum</i>	Pineland Bog Button	S3	G3		
<a href="#"><i>Lampropeltis calligaster rhombomaculata</i></a>	Mole Kingsnake	S1S2	G5T5		
<i>Lampsilis ornata</i>	Southern Pocketbook	S3	G5		
<i>Liatris tenuis</i>	Slender Gay-feather	S1	G3		
<i>Lilium catesbaei</i>	Southern Red Lily	S1	G4		
<i>Lilium superbum</i>	Turk's Cap Lily	S1	G5		
<a href="#"><i>Linum macrocarpum</i></a>	big fruit flax	SH	G2		
<a href="#"><i>Lophiola aurea</i></a>	Golden Crest	S2S3	G4		
<a href="#"><i>Ludwigia alata</i></a>	winged primrose willow	S1	G3G5		
<i>Lupinus villosus</i>	Lady Lupine	S2	G5		
<i>Lycopodiella cernua var. cernua</i>	Staghorn Clubmoss	S2	G5T5		
<a href="#"><i>Macranthera flammea</i></a>	Flame Flower	S2	G3		
<a href="#"><i>Macrolemys temminckii</i></a>	Alligator Snapping Turtle	S3	G3G4	Restricted Harvest	
<a href="#"><i>Malaclemys terrapin</i></a>	Diamondback Terrapin	S2	G4	Resticted Harvest	
<i>Mayaca fluviatilis</i>	Bog Moss	S2	G5		
<a href="#"><i>Micrurus fulvius</i></a>	Harlequin Coral Snake	S2	G5T5		
<i>Moxostoma carinatum</i>	River Redhorse	S1S3	G4		
<a href="#"><i>Mustela frenata</i></a>	Long-tailed Weasel	S2S4	G5		



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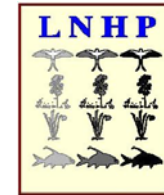
PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Myrica inodora</i>	Odorless Bayberry	S2	G4		
<i>National champion tree</i>	National Champion Tree	SNR	GNR		
<i>Noturus munitus</i>	Frecklebelly Madtom	S2S3	G3		
<i>Obovaria unicolor</i>	Alabama Hickorynut	S1	G3		
<a href="#"><i>Ophisaurus ventralis</i></a>	Eastern Glass Lizard	S3	G5		
<a href="#"><i>Pandion haliaetus</i></a>	Osprey	S2B,S3N	G5		
<i>Panicum tenerum</i>	Southeastern Panic Grass	S4	G4		
<a href="#"><i>Paronychia erecta var. corymbosa</i></a>	Paronychia Corymbosa	S1	G3G4T2T4		
<i>Percina aurora</i>	Pearl Darter	SH	G1		C
<a href="#"><i>Percina lenticula</i></a>	Freckled Darter	S1	G2		
<a href="#"><i>Physalis carpenteri</i></a>	Carpenter's Ground-cherry	S1	G3		
<a href="#"><i>Physostegia correllii</i></a>	Correll's False Dragon-head	S1	G2		
<a href="#"><i>Picoides borealis</i></a>	Red-cockaded Woodpecker	S2	G3	Endangered	LE
<a href="#"><i>Pine flatwoods</i></a>	Pine Flatwoods	S3	G2G3		
<i>Pinguicula lutea</i>	Yellow Butterwort	S2	G4G5		
<i>Platanthera blephariglottis var. conspicua</i>	White-fringe Orchid	S1	G4G5T3T4		
<i>Platanthera integra</i>	Yellow Fringeless Orchid	S3	G3G4		
<i>Podostemum ceratophyllum</i>	Riverweed	S1	G5		
<i>Polygala chapmanii</i>	Chapman's milkwort	S1	G3G5		
<a href="#"><i>Polygala crenata</i></a>	scalloped milkwort	S2	G4?		
<a href="#"><i>Polygala hookeri</i></a>	Hooker Milkwort	S1	G3		
<a href="#"><i>Polyodon spathula</i></a>	Paddlefish	S3	G4	Prohibited	
<a href="#"><i>Potamilus inflatus</i></a>	Inflated Heelsplitter	S1	G1G2Q	Threatened	LT
<a href="#"><i>Potamogeton perfoliatus</i></a>	Clasping-leaf Pondweed	SH	G5		
<i>Procambarus bivittatus</i>	Ribbon Crawfish	S1S2	G5		
<i>Procambarus shermani</i>	Plain Brown Crawfish	S2	G4		
<a href="#"><i>Pseudacris ornata</i></a>	Ornate Chorus Frog	S1	G5		





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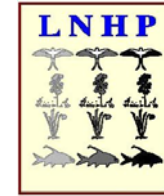


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Pseudotriton montanus</i>	Gulf Coast Mud Salamander	S1	G5	Prohibited	
<a href="#"><i>Pteroglossaspis ecristata</i></a>	A Wild Coco	S2	G2G3		
<i>Pteronotropis welaka</i>	Bluenose Shiner	S1S2	G3G4		
<a href="#"><i>Quercus arkansana</i></a>	Arkansas Oak	S2	G3		
<i>Quercus rubra</i>	Red Oak	S1S3	G5		
<i>Rana sevosia</i>	Dusky Gopher Frog	SH	G1		LE
<i>Reithrodontomys humulis</i>	Eastern Harvest Mouse	S3S4	G5		
<a href="#"><i>Rhadinaea flavilata</i></a>	Pine Woods Snake	S1	G4		
<i>Rhynchospora chapmanii</i>	Chapman Beakrush	S2	G4		
<a href="#"><i>Rhynchospora ciliaris</i></a>	Ciliate Beakrush	S2	G4		
<a href="#"><i>Rhynchospora compressa</i></a>	Flat-fruit Beakrush	S2	G4		
<i>Rhynchospora debilis</i>	Savannah Beakrush	S3	G4?		
<i>Rhynchospora decurrens</i>	Swamp-forest Beakrush	SH	G3G4		
<i>Rhynchospora divergens</i>	Spreading Beakrush	S1	G4		
<a href="#"><i>Rhynchospora miliacea</i></a>	Millet Beakrush	S2	G5		
<i>Rhynchospora perplexa</i>	pineland beaksedge	S4	G5		
<a href="#"><i>Ruellia noctiflora</i></a>	Night-flowering Wild-petunia	S1	G2		
<a href="#"><i>Sabatia arenicola</i></a>	Sand Rose-gentian	S1	G3G5		
<i>Saccharum brevibarbe</i>	Short-beard Plumegrass	S1	G3G5		
<a href="#"><i>Salix caroliniana</i></a>	Coastal Plain Willow	S1	G5		
<i>Sanicula marilandica</i>	Maryland's Black Snake-root	SH	G5		
<a href="#"><i>Sarracenia psittacina</i></a>	Parrot Pitcherplant	S3	G4		
<i>Scirpus etuberculatus</i>	Bulrush	S1	G3G4		
<i>Scleria verticillata</i>	Low Nutrush	S1	G5		
<i>Sclerolepis uniflora</i>	Pink Bob Button	S1	G4		
<a href="#"><i>Selaginella ludoviciana</i></a>	Louisiana Spikemoss	S1	G3G4		
<a href="#"><i>Serenoa repens</i></a>	Saw Palmetto	S1	G4G5		



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PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Sericocarpus linifolius</i>	Narrowleaf Aster	S2	G5		
<i>Sida elliotii</i>	Elliott Sida	SH	G4G5		
<i>Sium suave</i>	Hemlock Water-parsnip	S1S2	G5		
<i>Slash pine/post oak</i>	Slash Pine/Post Oak Forest	S3S4	GNR		
<i>Slash pine-cypress/hardwood forest</i>	Slash Pine-Pondcypress/Hardwood Forest	S2S3	G2?		
<i>Small stream forest</i>	Small Stream Forest	S3	G3		
<i>Smilax auriculata</i>	Eared Greenbrier	S2	G4?		
<i>Stewartia malacodendron</i>	Silky Camellia	S2S3	G4		
<i>Stipulicida setacea</i>	Pineland Scaly-pink	S1	G4G5		
<i>Submergent vascular vegetation (estuarine)</i>	Estuarine Submergent Vascular Vegetation	S1S2	G4?		
<i>Tephrosia hispidula</i>	hoary pea	S2?	G4G5		
<i>Tofieldia racemosa</i>	Coastal False-asphodel	S2S3	G5		
<i>Trichechus manatus</i>	Manatee	SZN	G2	Endangered	LE
<i>Trichomanes petersii</i>	Dwarf Filmy-fern	S2	G4G5		
<i>Tridens carolinianus</i>	Carolina Fluff Grass	S2	G3		
<i>Uniola paniculata</i>	Sea Oats	S2	G5		
<i>Ursus americanus luteolus</i>	Louisiana Black Bear	S2	G5T2	Threatened	LT
<i>Utricularia juncea</i>	Southern Bladderwort	S3	G5		
<i>Utricularia purpurea</i>	Purple Bladderwort	S3	G5		
<i>Waterbird Nesting Colony</i>	Waterbird Nesting Colony	SNR	GNR		
<i>Xyris fimbriata</i>	Fringed Yellow-eyed Grass	S2?	G5		
<i>Zigadenus leimanthoides</i>	Death Camus	S1	G4Q		

## EXPLANATION OF RANKING CATEGORIES EMPLOYED BY NATURAL HERITAGE PROGRAMS NATIONWIDE

Each element is assigned a single global rank as well as a state rank for each state in which it occurs. Global ranking is done under the guidance of NatureServe, Arlington, VA. State ranks are assigned by each state's Natural Heritage Program, thus a rank for a particular element may vary considerably from state to state. Federal ranks are designated by the U.S. Fish & Wildlife Service under the provisions of the Endangered Species Act of 1973. **DISCLAIMER:** This document is not an official copy of the laws in effect and should not be utilized or relied upon as such. For this reason, the accuracy of the information contained within this document cannot be guaranteed and the reader is cautioned that it is his/her responsibility to be apprised of the laws in effect at any given time. These laws include those contained within the Louisiana Revised Statutes, particularly Title 56, the official regulations of the Louisiana Wildlife and Fisheries Commission, federal laws, and any local or parish ordinances.

### FEDERAL RANKS (USES A FIELD):

LE = Listed Endangered

LT = Listed Threatened

PE = Proposed endangered

PT = Proposed Threatened

C = Candidate

PDL = Proposed for delisting

E (S/A) or T (S/A) = Listed endangered or threatened because of similarity of appearance

XE = Essential experimental population

XN = Nonessential experimental population

No Rank = Usually indicates that the taxon does not have any federal status. However, because of potential lag time between publication in the Federal Register and entry in the central databases and state databases, some taxa may have a status which does not yet appear.

(Rank, Rank) = Combination values in parenthesis = The taxon itself is not named in the Federal Register as having U.S. ESA status; however, all of its infraspecific taxa (worldwide) do have official status. The statuses shown in parentheses indicate the statuses that apply to infraspecific taxa or populations within this taxon. *THE SPECIES IS CONSIDERED TO HAVE A COMBINATION STATUS IN LOUISIANA*

(PS) = partial status = Status in only a portion of the species' range. Typically indicated in a "full" species record where an infraspecific taxon or population has U.S. ESA status, but the entire species does not. *THE SPECIES DOES NOT HAVE A STATUS IN LOUISIANA*

(PS: Rank) = partial status = Status in only a portion of the species' range. The value of that status appears because the entity with status does not have an individual entry in NatureServe. *THE SPECIES MAY HAVE A STATUS IN LOUISIANA*

### GLOBAL ELEMENT RANKS:

G1 = critically imperiled globally because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extinction

G2 = imperiled globally because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extinction throughout its range

G3 = either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single physiographic region) or because of other factors making it vulnerable to extinction throughout its range (21 to 100 known extant populations)

G4 = apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery (100 to 1000 known extant populations)

G5 = demonstrably secure globally, although it may be quite rare in parts of its range, especially at the periphery (1000+ known extant populations)

GH = of historical occurrence throughout its range; i.e., formerly part of the established biota, with the possibility that it may be rediscovered (e.g., Bachman's Warbler)

GU = possibly in peril range-wide, but status uncertain; need more information

G? = rank uncertain. Or a range (e.g., G3G5) delineates the limits of uncertainty

GQ = uncertain taxonomic status

GX = believed to be extinct throughout its range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered

T = subspecies or variety rank (e.g., G5T4 applies to a subspecies with a global species rank of G5, but with a subspecies rank of G4)

### STATE ELEMENT RANKS:

S1 = critically imperiled in Louisiana because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extirpation

S2 = imperiled in Louisiana because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extirpation

S3 = rare and local throughout the state or found locally (even abundantly at some of its locations) in a restricted region of the state, or because of other factors making it vulnerable to extirpation (21 to 100 known extant populations)

S4 = apparently secure in Louisiana with many occurrences (100 to 1000 known extant populations)

S5 = demonstrably secure in Louisiana (1000+ known extant populations)

(B or N may be used as qualifier of numeric ranks and indicating whether the occurrence is breeding or nonbreeding)

SA = accidental in Louisiana, including species (usually birds or butterflies) recorded once or twice or only at great intervals hundreds or even thousands of miles outside their usual range

SH = of historical occurrence in Louisiana, but no recent records verified within the last 20 years; formerly part of the established biota, possibly still persisting

SR = reported from Louisiana, but without conclusive evidence to accept or reject the report

SU = possibly in peril in Louisiana, but status uncertain; need more information

SX = believed to be extirpated from Louisiana

SZ = transient species in which no specific consistent area of occurrence is identifiable

### STATE PROTECTION STATUS:

*State status are contained in Title 56 of the Louisiana Revised Statutes as well as relevant rules and regulations adopted by the Louisiana Wildlife and Fisheries Commission and the Secretary of the Department of Wildlife and Fisheries. The Secretary of the Department of Wildlife and Fisheries is authorized to implement additional restrictions in emergency situations in order to protect fish and wildlife resources.*

Endangered = Taking or harassment of these species is a violation of state and federal laws.

Threatened = Taking or harassment of these species is a violation of state and federal laws.

Threatened/Endangered = Taking or harassment of these species is a violation of state and federal laws.

Prohibited = Possession of these species is prohibited. No legal harvest or possession.

Restricted Harvest = There are restrictions regarding the taking and possession of these species

**Appendix B**  
**USFWS 2008 Scoping Comments Letter**

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## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
646 Cajundome Blvd.  
Suite 400  
Lafayette, Louisiana 70506



December 16, 2008

Dr. James A. Barlow  
Project Analyst  
New Orleans District Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Dr. Barlow:

The U.S. Department of the Interior, Fish and Wildlife Service (Service) has reviewed the November 19, 2008, Federal Register Notice (our reference number ER 08/1203) announcing a Notice of Intent to prepare a Draft Environmental Impact Statement (DEIS) for a proposed highway between the town of Bush and Interstate Highway 12, in St. Tammany Parish, Louisiana. That notice provides the Service an early opportunity to submit technical assistance input to the DEIS scoping process. In response to that request, we offer the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321-4347).

### Impacts to Federally Listed Species

Four threatened and endangered species, including the Louisiana quillwort, gopher tortoise, red-cockaded woodpecker and ringed mapped turtle occur within the proposed project area. A brief description of those species and their habitat requirements are described below.

### Louisiana Quillwort

Federally listed as an endangered plant species, the Louisiana quillwort (*Isoetes louisianensis*) grows on sand and gravel bars on the accreting sides of streams and moist overflow channels within riparian forest communities in Washington and St. Tammany Parishes, Louisiana, as well as 10 counties in Mississippi and 2 counties in Alabama. The Louisiana quillwort is a small, semi-aquatic, facultative evergreen plant with spirally arranged leaves (sporophylls) arising from a globose, two-lobed corm. The hollow leaves are transversely septate, and measure approximately 0.12 inches wide and up to 16 inches long. Major threats to this species are habitat loss through hydrologic modifications of stream habitat, and land use practices that significantly alter stream water quality and hydrology. Apparently, it is dependent on a special hydrologic regime resulting from the presence of small springs scattered at the base of banks or bluffs. The Louisiana quillwort may be directly or indirectly impacted by construction activities that destroy their colonies, or that reduce their habitat via water quality degradation or changes in stream



morphology. Should direct or indirect project impacts occur in streams containing this species, further consultation with this office will be required.

### **Gopher Tortoise**

The gopher tortoise (*Gopherus polyphemus*), which is federally listed as a threatened species, is known to inhabit the Ben's Creek Wildlife Management Area (WMA), as well as pipeline rights-of-way (ROWs) and powerline ROWs in Washington Parish, Louisiana. The gopher tortoise is associated with areas that have well-drained, sand or gravel soils appropriate for burrow establishment, ample sunlight for nesting, and understory vegetation suitable for foraging (i.e., grasses and forbs). Gopher tortoises prefer "open" longleaf pine-scrub oak communities that are thinned and burned every few years. The gopher tortoise is the only native tortoise found in the southeastern United States. Habitat degradation (lack of thinning or burning on pine plantations) and conversion to agriculture or urbanization have contributed to the decline of that species. That habitat decline has generally concentrated remaining gopher tortoise populations along pipeline and powerline rights-of-way within their range in Louisiana.

Please note that the Corps has an affirmative responsibility to consult with the Service regarding the project effects to federally listed threatened or endangered species and their habitat. A qualified biologist should conduct a survey for the exact locations of gopher tortoises and/or their burrows. We recommend that you provide this office with a copy of the survey report, which should include the following information:

1. survey methodology including dates, qualifications of survey personnel, size of survey area, and transect density (preferably every 10 meters);
2. general soil type, understory conditions, percent canopy cover, and species composition (several representative photographs should be included);
3. number of gopher tortoise burrows observed and signs of activity (i.e., fresh dirt around the burrow entrance, trails leading to and from the burrow, etc);
4. presence or absence of gopher tortoises outside the burrow; and
5. topographic quadrangle maps which illustrate areas of adequate gopher tortoise habitat, burrow sites, and individual and colony locations relative to proposed construction activities.

The Corps should also provide this office with a Biological Assessment (BA) of project effects to the gopher tortoise and its habitat. At a minimum, that BA should include:

1. A detailed description of the proposed project. That description should include a plat depicting the precise location and dimensions of all project-related activities.
2. A detailed description of the specific area and habitats that would be affected by the proposed project. That description should include a plat depicting the precise location of the proposed project features in relation to gopher tortoise burrow locations and suitable habitat, particularly those within the immediate project area.

3. A detailed description of the secondary or indirect project impacts. That description should include a plat depicting the dimensions of the proposed project features in relation to gopher tortoise burrow locations and suitable habitat, as well as a complete description of any monitoring plans that would be implemented before, during, and after construction.

### **Red Cockaded Woodpecker**

The endangered red-cockaded woodpecker (RCW, *Picoides borealis*) nests in open, park-like stands of mature (i.e., greater than 60 years of age) pine trees containing little hardwood understory or midstory. RCWs can tolerate small numbers of overstory hardwoods or large midstory hardwoods at low densities found naturally in many southern pine forests, but they are not tolerant of dense hardwood midstories resulting from fire suppression. RCWs excavate roost and nest cavities in large living pines (i.e., 10 inches or greater in diameter at breast height). The cavity trees and the foraging area within 200 feet of those trees are known as a cluster. Foraging habitat is defined as pine and pine-hardwood (i.e., 50 percent or more of the dominant trees are pines) stands over 30 years of age that are located contiguous to and within one-half mile of the cluster.

If the proposed project area does not contain suitable nesting and/or foraging habitat as defined above, further consultation with the Service for this project will not be necessary. If suitable nesting and/or foraging habitat does exist, however, all suitable nesting habitat within a one-half mile radius from the project boundary should be carefully surveyed by a qualified biologist for the presence of RCW clusters in accordance with the RCW Recovery Plan (2003) survey protocol. We recommend that you provide this office with a copy of the survey report, which should include the following details:

1. survey methodology including dates, qualifications of survey personnel, size of survey area, and transect density;
2. pine stand characteristics including number of acres of suitable nesting and/or foraging habitat, tree species, basal area and number of pine stems 10 inches or greater per acre, percent cover of pine trees greater than 60 years of age, species of dominant vegetation within each canopy layer, understory conditions and species composition (several representative photographs should be included);
3. number of active and inactive RCW cavity trees observed and the condition of the cavities (e.g., resin flow, shape of cavity, start-holes);
4. presence or absence of RCWs; and
5. topographic quadrangle maps which illustrate areas of adequate RCW nesting and/or foraging habitat, cluster sites, and cavity tree locations relative to proposed construction activities.

If no RCW clusters are found within a one-half mile radius of the project boundary, a request for our concurrence with your "not likely to adversely affect" determination, as well as the basis for



your determination, should be included with the survey report. If we concur with that determination, no further consultation with this office will be necessary. If RCW clusters are found in the surveyed areas, however, then further consultation with this office will be required.

### **Ringed Map Turtle**

The threatened ringed map (=sawback) turtle (*Graptemys oculifera*) is endemic to the Pearl River system. In Louisiana, it occurs in the Bogue Chitto River south of Franklinton, and in the Pearl River north of Louisiana Highway 190 in St. Tammany and Washington Parishes. It is found in riverine habitats with moderate currents, channels wide enough to permit sunlight penetration for several hours each day, numerous logs for basking, and large, sandy banks that are used for nesting. Habitat loss (i.e., loss of exposed sandbars, basking areas) and water quality degradation (which decreases food supply) have contributed to the decline of this species. Should the proposed project directly or indirectly affect the ringed sawback turtle or its habitat, further consultation with this office will be necessary.

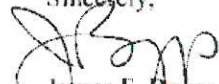
### Impacts to Wetland and Sensitive Habitat Impacts

The proposed highway project has the potential to impact from 75 to 475 acres, depending on which alignment is ultimately chosen. The project alternative analysis should address measures to avoid, minimize, and compensate for wetland impacts. In addition, substantial secondary and cumulative wetland impacts would likely occur should the proposed highway be constructed on an alignment that is not an upgrade of an existing highway. As such, the EIS should thoroughly address secondary and cumulative impacts.

Several existing Wetland Mitigation Banks occur within the project vicinity (i.e., Bayou Lacombe, Tallisheek, Abita Creek, and Lake Ramsey) and several more banks are being currently being evaluated for wetland mitigation purposes in St. Tammany Parish. The EIS should address measures to avoid and minimize impacts to those banks. All of the St. Tammany Parish banks rely on fire management to obtain their habitat objectives. Construction of a highway in close proximity to one of those bank sites could reduce or disrupt necessary fire management practices. The EIS should address potential secondary impacts resulting from the highway's potential to effect fire management practices on wetland mitigation bank sites.

We appreciate the opportunity to provide these comments. If you have any questions pertaining to our comments or require further information, please contact Patti Holland of this office (337/291-3121).

Sincerely,



James F. Boggs  
Supervisor

Louisiana Field Office

cc: EPA, New Orleans Co-location Office, New Orleans, LA  
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA  
BCPA (ERT), Washington DC  
OEPC, Washington DC  
FWS, Region 4, Atlanta, GA

#### **Literature Cited**

U.S. Fish and Wildlife Service. 2003. Recovery plan for the red-cockaded woodpecker (*Picoides borealis*): second revision. U.S. Fish and Wildlife Service, Atlanta, GA. 296 pp.

**Appendix C**  
**Gopher tortoise Critical Habitat Survey**

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## APPENDIX C

### Gopher Tortoise Critical Habitat Survey

#### 1.0 Introduction

The gopher tortoise is associated with areas that have well-drained, sand or gravel soils appropriate for burrow establishment, ample sunlight for nesting, and understory vegetation suitable for foraging (i.e., grasses and forbs). Gopher tortoises prefer an open longleaf pine-scrub oak community that is thinned and burned every few years (USFWS 2008). Habitat degradation through fire suppression and land conversion to agriculture or urbanization have contributed to the decline of the species. Habitat decline has generally concentrated the remaining gopher tortoise population along pipeline and power line rights-of-way within their range in Louisiana. Potential gopher tortoise critical habitat has been previously identified in St. Tammany Parish, Louisiana.

#### 2.0 Areas Investigated

The areas investigated as part of the gopher tortoise critical habitat survey included the 250-foot right-of-way (ROW) corridor for each of the four alternative alignments and two locations previously identified by the USEPA (Figure C-1). Areas within the ROW having soils (Cahaba, Latonia, and Ruston) suitable for gopher tortoise habitat were identified and recorded for the field surveys. In 2001, the U.S. Environmental Protection Agency (USEPA) Endangered Species Protection Program identified two locations of potential gopher tortoise critical habitat in St. Tammany Parish (USEPA 2001). For the purposes of the survey, these two areas have been identified as Bush and Talisheek due to their proximity to these communities.

##### Bush

The Bush area is located approximately 2 miles south-southeast of the LA 21/LA 40 intersection, and is approximately 1,240 acres (Figure C-2). The area is bound to the north by Cowart Bush Road, to the south by Watts Thomas Road, to the east by LA 41, and to the west by Watts Thomas Road. The Bush area consists of residential homes and cattle pastures around the perimeter, bottomland hardwoods in the interior, and a stand of pine in the southeast corner. This stand of pine is overgrown with a heavy understory and does not appear to be managed or have been thinned within the past 10 years. Soils found within the area are shown on Figure C-3 and listed in Table C-1.

**Table C-1**  
**Soil types in the Bush and Talisheek areas**

<b>Soil Type</b>	<b>Description</b>
Arat silty clay loam (AR)	Very poorly drained with slow permeability
Cahaba fine sandy loam (Ca)	Deep, well drained, moderately permeable
Latonia fine sandy loam (Lt)	Deep, well drained, moderately rapidly permeable
Myatt fine sandy loam (Mt)	Deep, poorly drained, moderately slowly permeable
Myatt fine sandy loam, frequently flooded (My)	Deep, poorly drained, moderately slowly permeable
Prentiss fine sandy loam, 0 to 1 percent slope (Pr)	Deep, moderately well drained, moderately permeable
Prentiss fine sandy loam, 1 to 3 percent slopes (Pt)	Deep, moderately well drained, moderately permeable
Stough fine sandy loam (St)	Deep, somewhat poorly drained, moderately slow permeability

Source: Natural Resources Conservation Service 1990

Vegetation in the non-wetland areas consists of a mix of slash pine (*Pinus elliottii*), privet (*Ligustrum sinense*), yaupon (*Ilex vomitoria*), laurel greenbriar (*Smilax laurifolia*), and broomsedge (*Andropogon* spp.). Canopy cover in the non-wetland areas ranged from open in the pasture and residential areas to closed (70-100% of the sky obstructed) in the pine-dominated areas. Vegetation in the interior of the area included bald cypress (*Taxodium distichum*), water tupelo (*Nyssa aquatica*) and slash pine. Canopy cover in the interior of the site would be classified as closed (70-100% of the sky obstructed). See the photographic log for representative photographs of the area.

#### Talisheek

The Talisheek area is located immediately south of the LA 41/LA 435 intersection, and is approximately 785 acres (Figure C-4). The area is bound to the north and east by LA 41, to the west by an abandoned railroad corridor, and no distinct boundary line to the south. The Talisheek area consists of residential homes, commercial businesses, light agriculture, stands of pine, and open pine savanna/wetlands. The stands of pine in the southern end of the area are overgrown with a heavy understory and do not appear to be managed or have been thinned within the past 5 to 10 years. Soil types found are similar to those in the Bush area (See Figure C-5 and Table C-1).

Vegetation in the non-wetland areas consists of a mix of slash pine, privet, yaupon, laurel greenbriar, and broomsedge. Canopy cover in the non-wetland areas ranged from open in the residential areas to closed (70-100% of the sky obstructed) in the pine-dominated areas. Vegetation in the pine savanna/wetland area consists of slash pine, broomsedge, laurel greenbriar, and pitcher plant (*Sarracenia alata*). See the photographic log for representative photographs of the area.

### **3.0 Survey Methodology**

The methodology for the 250-ft ROW corridors for each alignment consisted of walking the entire alignment and making note of any area that appeared to be potential gopher tortoise habitat, based on soils data and habitat conditions. Any areas that were identified as potential habitat were to be marked with a GPS and a follow-up detailed field survey would be performed at these locations. During the initial survey of each alignment soil types were identified within the 250-ft ROW that could be conducive to potential gopher tortoise habitat, but the habitat did not exist. Most of the areas were unmanaged pine with heavy understory, cleared residential areas, or wetlands. See Photographs 1 through 4 in the attached photolog for representative photographs of these areas. As a result, follow-up detailed surveys were not performed within the 250-ft ROW for any of the alternative alignments.

Detailed surveys of those areas identified by USEPA as having potential suitable habitat were completed on February 15, 2011. Survey methodology followed the USFWS guidelines as specified in their 2008 scoping comment letter (USFWS 2008). Site reconnaissance of each area was performed by walking and driving the sites to identify potential suitable habitat. Habitat was identified as suitable if it met the following criteria: well-drained area, sandy soils, moderate overstory (<70% of the sky obstructed by canopy cover), and light understory with suitable vegetation for foraging. If an area met this criteria, transects were walked approximately every 30 meters to search for the presence of gopher tortoise burrows (Figures C-6 and C-7).

### **4.0 Results**

#### Bush

Field surveys of the Bush area did not identify suitable gopher tortoise habitat. The interior of the site consists of poorly drained soils, bottomland hardwood tree species, and could be classified as a wetland. In addition, the heavy understory is not suitable for burrow or foraging habitat. The soils on the perimeter of the area are not sandy enough for burrow habitat. The soils in the cattle pastures were wet and had been disturbed by cattle grazing. The stand of pine in the southeast corner of the area is overgrown with a heavy understory not suitable for burrow or foraging habitat. As a result, gopher tortoise and burrows

were not observed during the field survey, and this area was determined not suitable as gopher tortoise habitat.

**Talisheek**

Field surveys of the Talisheek area did not identify suitable gopher tortoise habitat. The large open area in the interior of the area is pine savanna habitat, but had standing water throughout and would be classified as a wetland. Although the stands of pine around the perimeter of the area have an open to moderately closed canopy, the heavy understory and wet soils deem these areas not suitable for burrow or foraging habitat. As a result, gopher tortoise and burrows were not observed during the field survey, and this area was determined not suitable as gopher tortoise habitat.

Gopher tortoise and burrows were not observed during any of the wetland delineation or threatened and endangered species field surveys. No critical habitat has been identified for gopher tortoise within the 250-ft ROW, or vicinity of, any of the alternative alignments.

**5.0 Qualifications**

The following personnel were responsible for conducting this survey.

<b>Personnel</b>	<b>Discipline</b>	<b>Experience</b>	<b>Role</b>
Dean Goodin, PhD	Ecology	10 years of biological studies and T&E surveys	Project manager, lead field reconnaissance, report preparation
Nicole Janak	Ecology/Biology	6 years of biological studies	Field reconnaissance, report preparation, and GIS

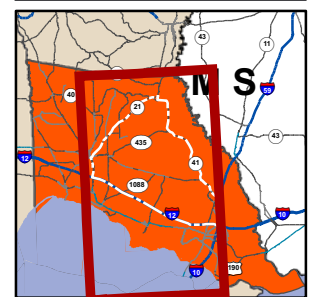
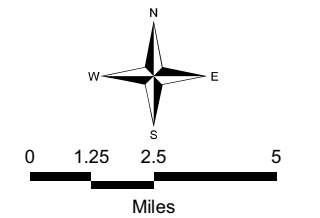
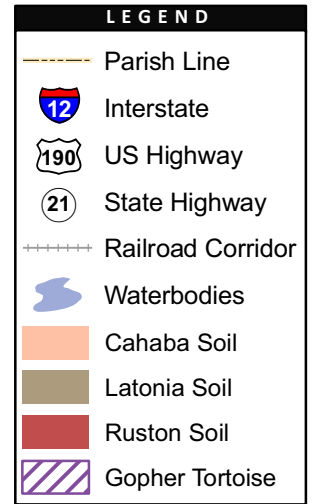
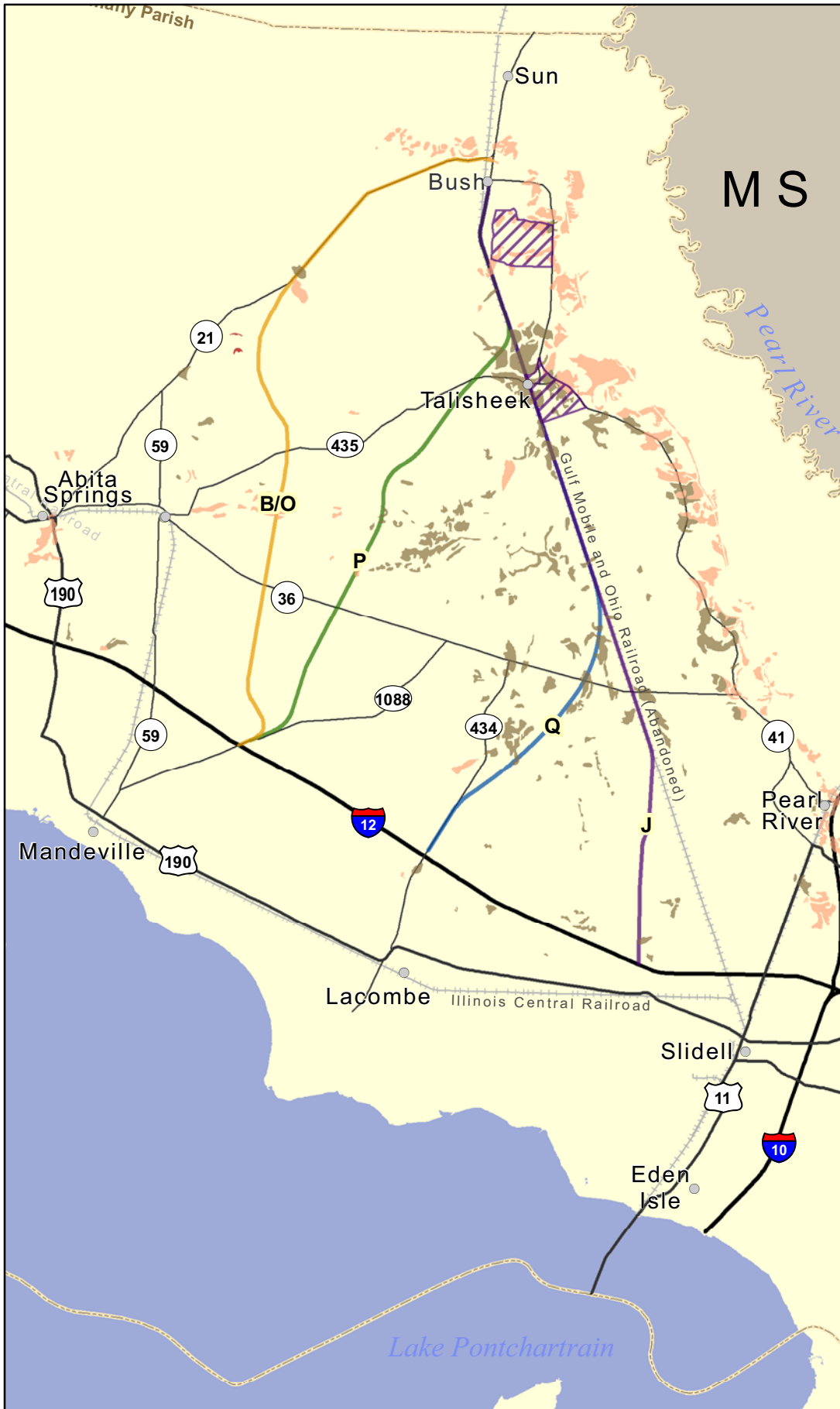
**6.0 References**

USEPA (U.S. Environmental Protection Agency). 2001. *Gopher Tortoise and Ringed Sawback Turtle in St. Tammany Parish, Louisiana*. Endangered Species Protection Program. [www.epa.gov/espp/louisiana/sttammany-map.pdf](http://www.epa.gov/espp/louisiana/sttammany-map.pdf). Accessed October 25, 2010.

USFWS (U.S. Fish and Wildlife Service). 2008. Comment letter regarding the Federal Register of Notice of Intent to prepare a Draft Environmental Impact Statement for a proposed highway between the town of Bush and I-12, St. Tammany Parish, Louisiana. Letter dated December 16, 2008 to Dr. James A. Barlow, New Orleans District Corps of Engineers.

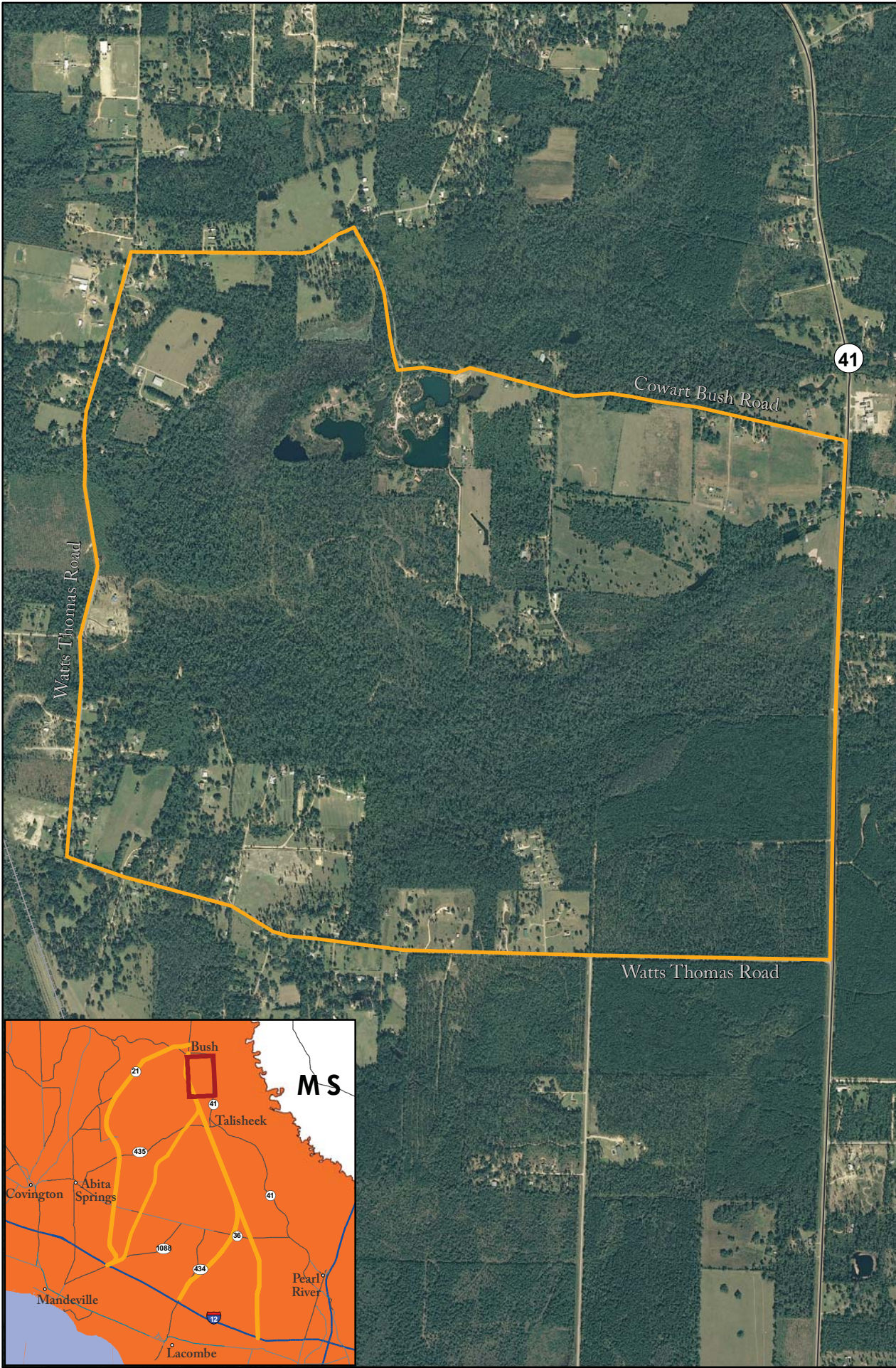
## FIGURES







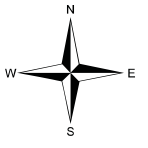
**US Army Corps of Engineers**  
New Orleans District





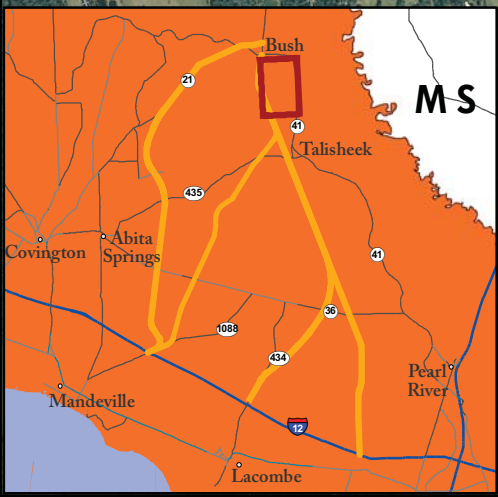
**LEGEND**

-  Gopher Tortoise
-  State Highway



0 550 1,100 2,200  
Feet

**LOCATION**



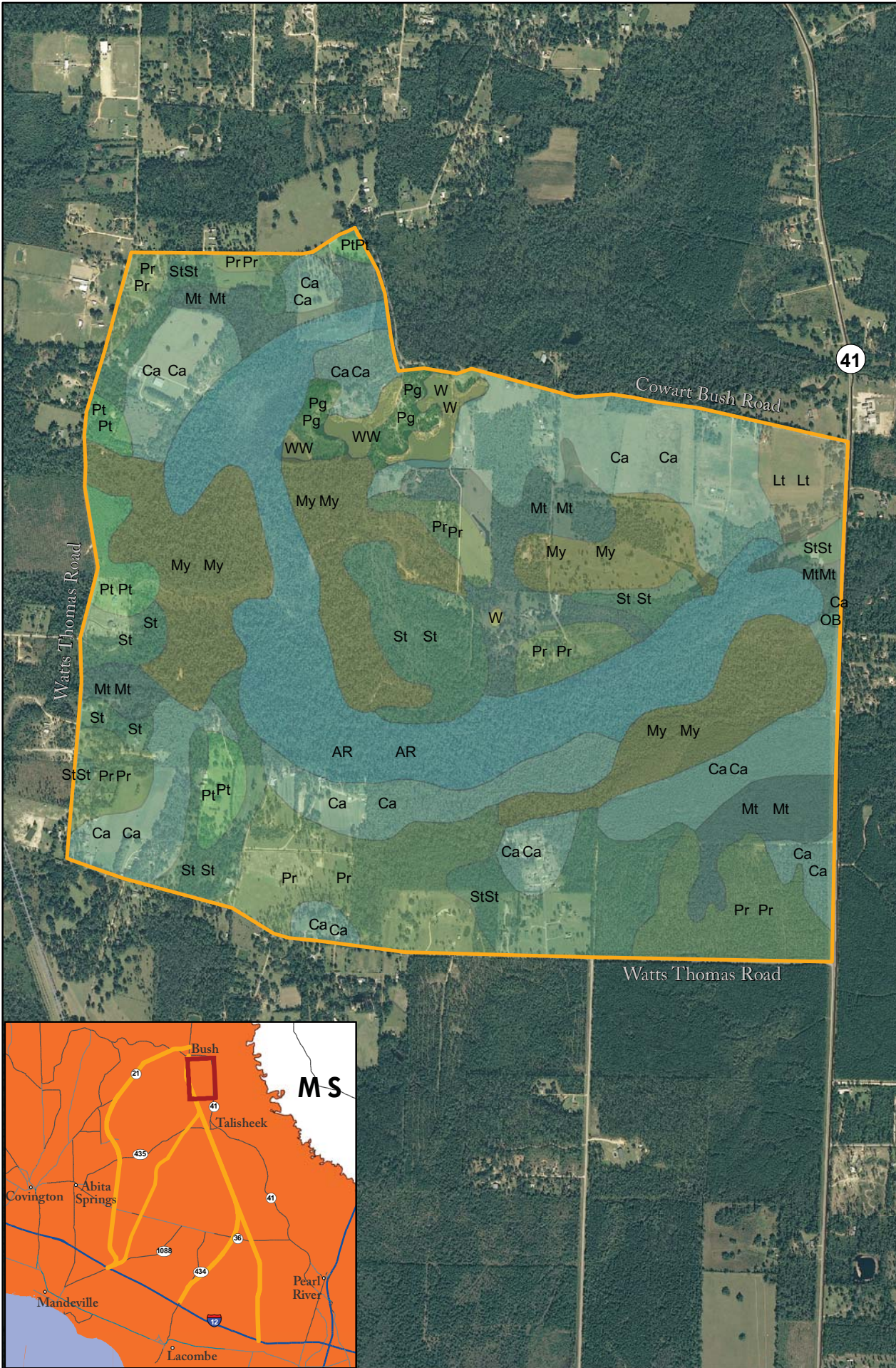
Bush  
Talisheek  
Covington  
Abita Springs  
Mandeville  
Lacombe  
Pearl River

Source: 2008 DOQQ















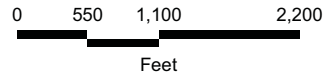
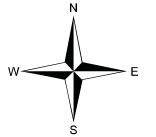
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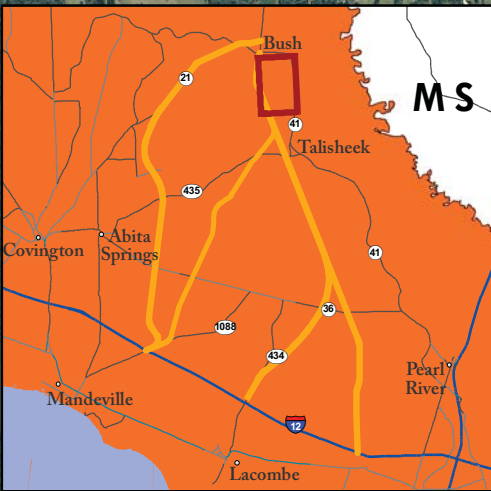


LEGEND

-  Gopher Tortoise
- Soil MU Symbol**
-  AR - Arat silty clay loam
-  Ca - Cahaba fine sandy loam
-  Lt - Latonia fine sandy loam
-  Mt - Myatt fine sandy loam
-  My - Myatt fine sandy loam, 0-1% slope
-  Pg - Borrow Pit
-  Pr - Prentiss fine sandy loam, 0-1% slope
-  Pt - Prentiss fine sandy loam, 1-3% slopes
-  St - Stough fine sandy loam
-  W - Water
-  (21) State Highway



LOCATION

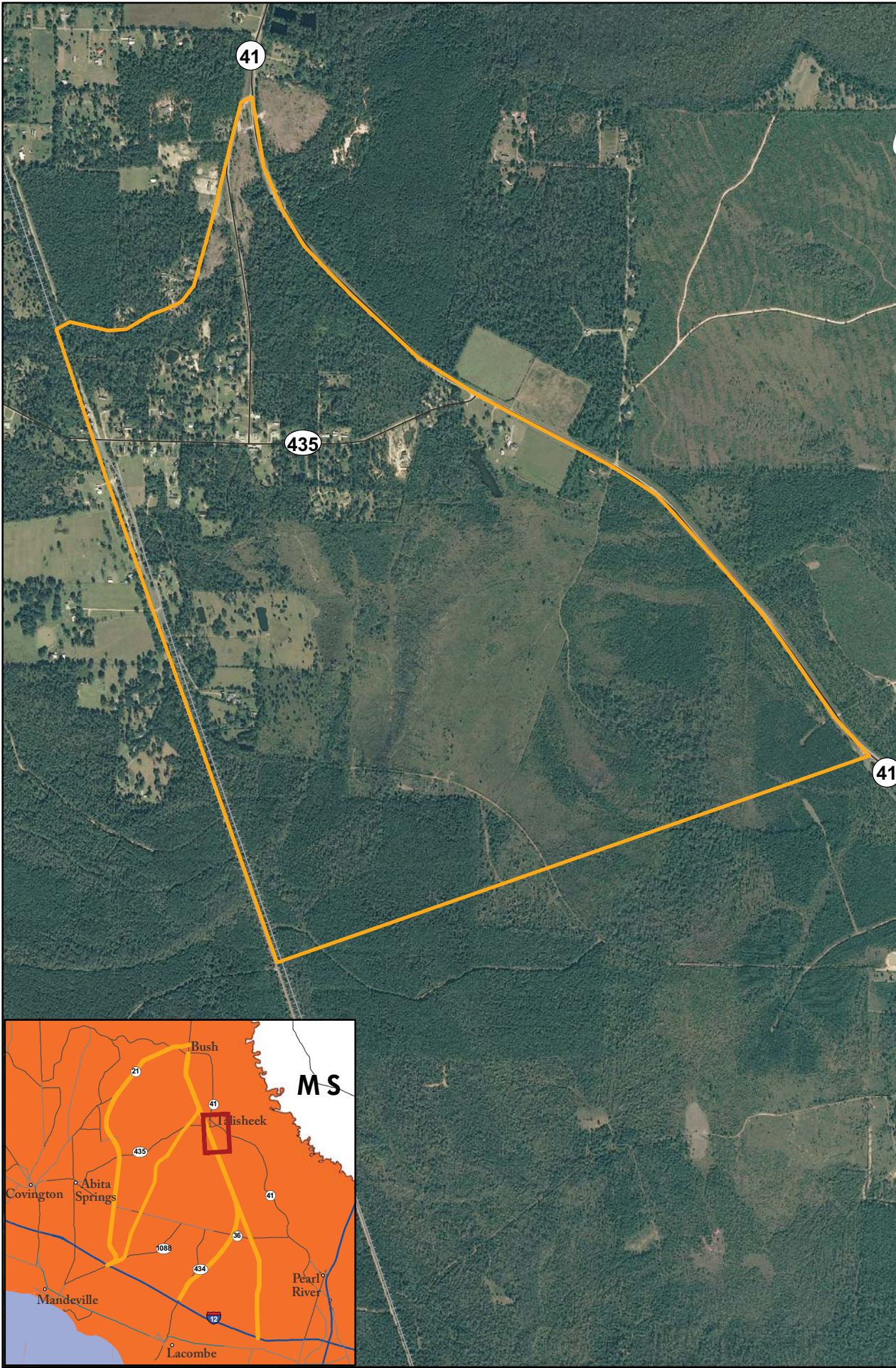


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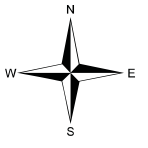
**US Army Corps of Engineers**  
New Orleans District





**LEGEND**

-  Gopher Tortoise
-  State Highway



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Feet

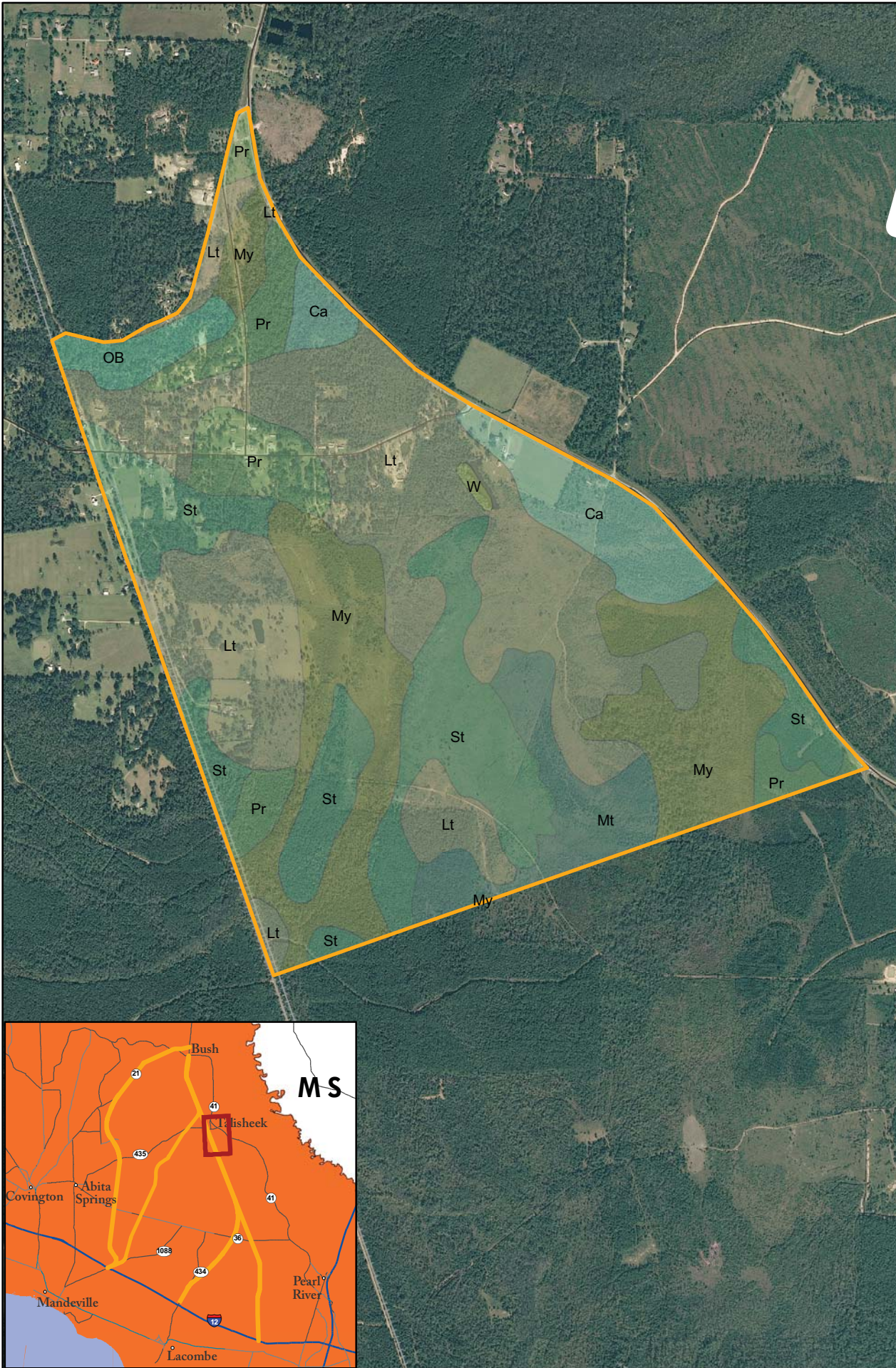
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**US Army Corps of Engineers**  
New Orleans District



Source: 2008 DOQQ

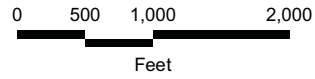


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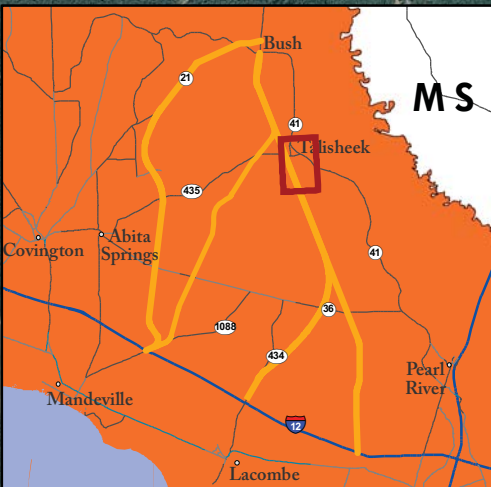
Gopher Tortoise

Soil MU Symbol

- AR - Arat silty clay loam
  - Ca - Cahaba fine sandy loam
  - Lt - Latonia fine sandy loam
  - Mt - Myatt fine sandy loam
  - My - Myatt fine sandy loam, 0-1% slope
  - Pg - Borrow Pit
  - Pr - Prentiss fine sandy loam, 0-1% slope
  - Pt - Prentiss fine sandy loam, 1-3% slopes
  - St - Stough fine sandy loam
  - W - Water
- 21 State Highway



LOCATION

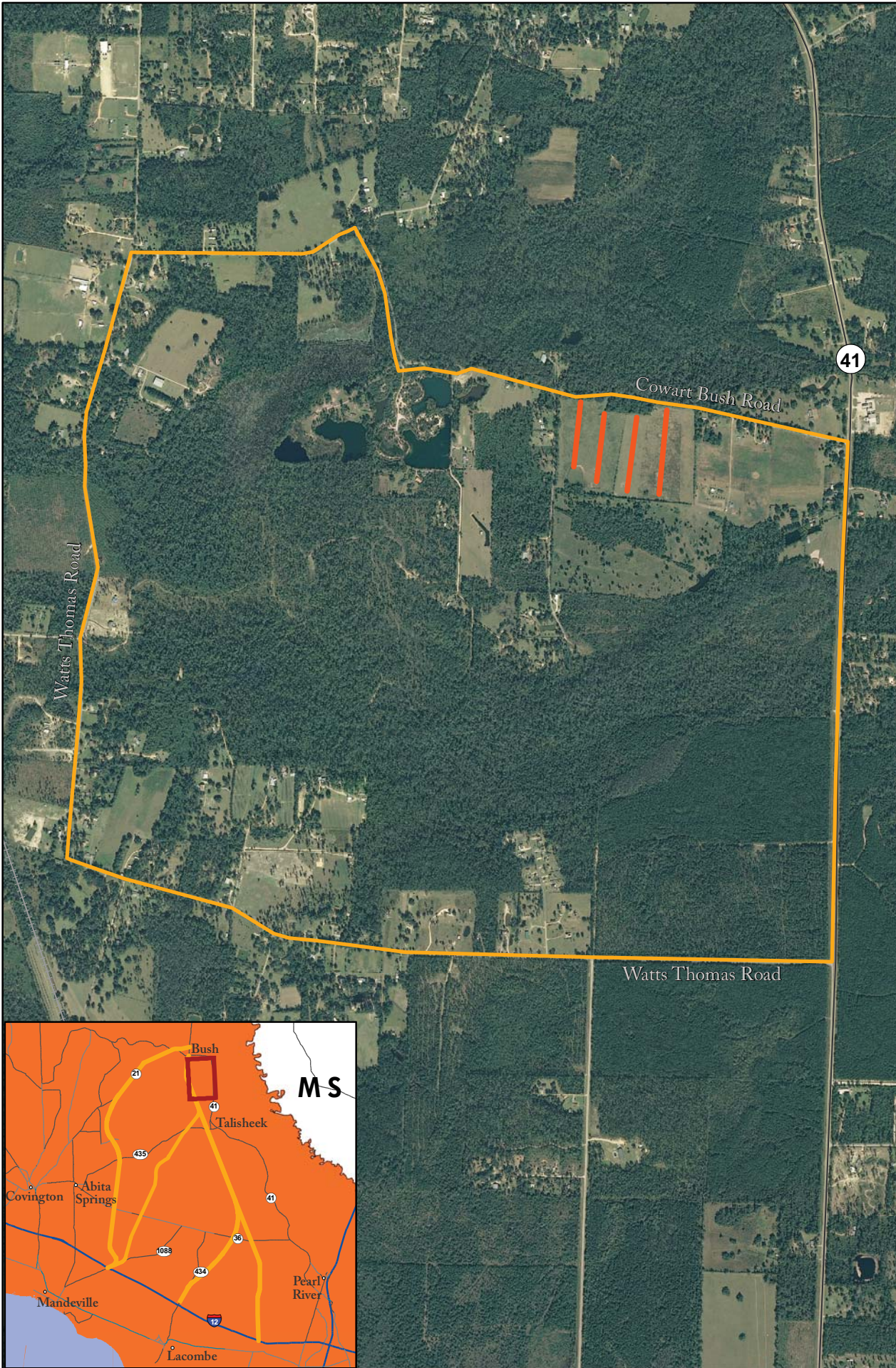


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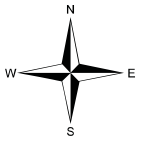
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**LEGEND**

-  Gopher Tortoise
-  Transect
-  State Highway



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Feet

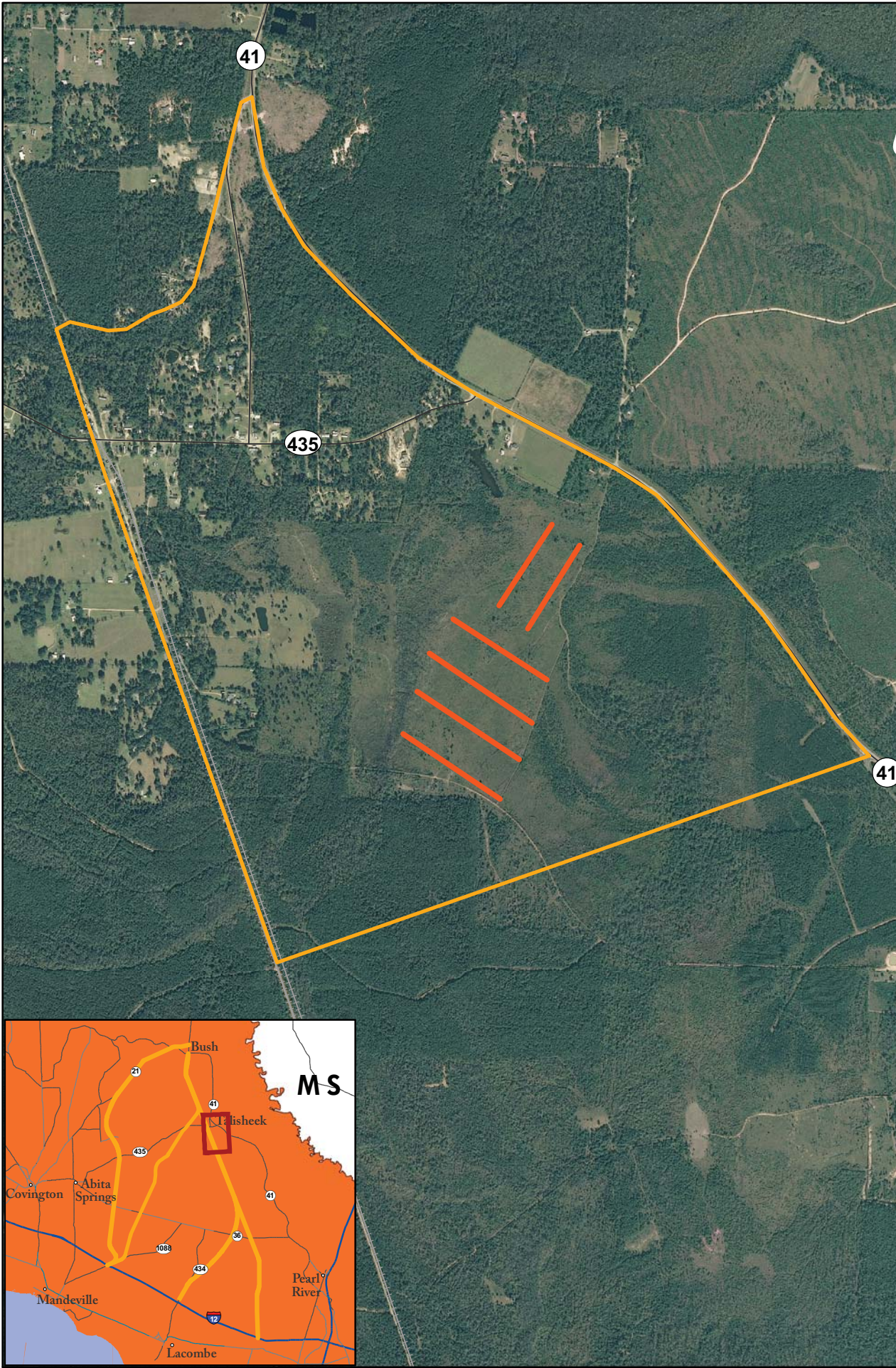
**LOCATION**







**US Army Corps of Engineers**  
New Orleans District




Source: 2008 DOQQ



**LEGEND**

-  Gopher Tortoise
-  Transect
-  State Highway



0 500 1,000 2,000  
Feet

**LOCATION**




**US Army Corps of Engineers**  
New Orleans District



Source: 2008 DOQQ

## **PHOTOGRAPHIC DOCUMENTATION**





**Photographic Documentation**  
**I-12 to Bush: Gopher tortoise field survey**  
**St. Tammany Parish, LA**

**Photo: 1**

Alternative B/O: Typical habitat



**Photo: 2**

Alternative J: Typical habitat





**Photographic Documentation**  
**I-12 to Bush: Gopher tortoise field survey**  
**St. Tammany Parish, LA**

**Photo: 3**

Alternative Q: Typical habitat



**Photo: 4**

Alternative Q: Typical habitat





**Photographic Documentation**  
**I-12 to Bush: Gopher tortoise field survey**  
**St. Tammany Parish, LA**

**Photo: 5**

Bush area: Typical pine stand



**Photo: 6**

Bush area: Typical pasture





**Photographic Documentation**  
**I-12 to Bush: Gopher tortoise field survey**  
**St. Tammany Parish, LA**

**Photo: 7**

Bush area: Typical  
perimeter vegetation



**Photo: 8**

Bush area: Typical interior  
vegetation





**Photographic Documentation**  
**I-12 to Bush: Gopher tortoise field survey**  
**St. Tammany Parish, LA**

**Photo: 9**

Talisheek area: Typical  
pine savanna



**Photo: 10**

Talisheek area: Typical  
interior habitat





**Photographic Documentation**  
**I-12 to Bush: Gopher tortoise field survey**  
**St. Tammany Parish, LA**

**Photo: 11**

Talisheek area: Typical  
pine stand



**Photo: 12**

Talisheek area: Typical  
pine stand



**Appendix D**  
**Red-cockaded Woodpecker Critical Habitat Survey**

## APPENDIX D

### Red-cockaded Woodpecker Critical Habitat Survey

#### 1.0 Introduction

The red-cockaded woodpecker nests in open, park-like stands of mature (i.e., older than 60 years) pine trees containing little hardwood understory or midstory. The woodpeckers can tolerate small numbers of overstory hardwood or large midstory hardwood trees at low densities found naturally in many southern pine forests, but they are not tolerant of dense hardwood midstories resulting from fire suppression. A cluster is a set of cavity trees and foraging area within 200 feet of those trees. Ideal foraging habitat is defined as pine and pine-dominant pine-hardwood stands older than 30 years continuous to and within one-half mile of a cluster (CEMVN 2008).

During field surveys of the proposed alternative alignments in March, April, May, and September 2010, red-cockaded woodpeckers and known cavity trees were not observed within the 250-ft ROW, or vicinity of, any of the alternative alignments. Potential suitable foraging and nesting habitat was observed in the vicinity of the ROW in one location along Alternative B/O, two locations along Alternative P, one location along Alternative Q, and one location along Alternative J (Figure D-1). Tetra Tech biologists investigated these areas on February 9 and 15, 2011 to determine if foraging and nesting habitat requirements were met. A description of survey methods, areas investigated, and results of the survey are detailed in the following sections.

#### 2.0 Survey Methodology

Survey methodology followed the USFWS guidelines as specified in their 2008 scoping comment letter (USFWS 2008). The USFWS defines suitable foraging habitat as a stand of trees where at least 50% are pines that are 30 years or older and have a minimum DBH of 10 inches. Suitable nesting habitat is composed of pine trees within a stand that are 60 years and older. In the event that suitable nesting habitat is identified, field scientists must run north-south transects no more than 100 yards apart in order to inspect trees for the presence and developmental stage of RCW cavities (USFWS 2003).

#### 3.0 Areas Investigated and Results

##### Alternative J

A 220-acre area along this alternative (Figure D-2) was investigated on February 9, 2011, and was found to have no suitable foraging or nesting habitat. Two small stands containing pine species 30 years old with a DBH 10 inches were identified along a small creek running through the area. These pines comprised a maximum of 10% of the trees in the area, thus not meeting the 50% requirement for foraging habitat. No trees 60 years or older were found in the area. See the photographic log for representative photographs of the area.

##### Alternative Q

A 60-acre area along this alternative (Figure D-3) was investigated on February 9, 2011, and was found to have no suitable foraging or nesting habitat. Less than 1% of the trees in the investigated area were pines 30 years or older with a DBH of 10 inches. There were no pines found to be 60 years or older. See the photographic log for representative photographs of the area.

##### Alternative B/O

A 125-acre area along this alternative (Figure D-4) was investigated on February 9, 2011, and was found to have no suitable foraging or nesting habitat. Less than 1% of the trees in the investigated area were pines 30 years or older with a DBH of 10 inches. There were no pines found to be 60 years or older. Most of the larger trees identified during initial investigation are not pine species. See the photographic log for representative photographs of the area.



### Alternative P

A 45-acre area along the northern portion of this alternative (Figure D-5) was investigated on February 9, 2011, and was found to have suitable potential foraging habitat, but no potential nesting habitat. The area was found to contain roughly 60% pine species that were at least 30 years old and a DBH of 10 inches or more. The area did not contain any trees 60 years or older. The dominant canopy species in this stand was slash pine (*Pinus elliottii*); with understory vegetation also made up of slash pines. See the photographic log for representative photographs of the area.

A 180-acre area along the southern portion of this alternative (Figure D-6) was investigated on February 15, 2011, and was found to have both suitable nesting and foraging habitats. Pines species along a creek running through the investigated area contain pine species meeting requirements for nesting and foraging habitat. Approximately 70 acres of potential RCW habitat were identified through the survey, which included approximately 20 acres of potential nesting habitat and approximately 50 acres of potential foraging habitat. The investigated area was dominated by slash pine canopy with some maple saplings. Other species of vegetation in this area were very limited and provided a relatively clear understory. Field biologists walked north-south transects approximately 75 yards apart in order to investigate for the presence of cavities in the identified potential nesting area. Cavities were found in two dead pine species, but no cavities were observed in any living pine species. One of the trees had approximately 7-10, and the other had approximately 3-5 well developed cavities. Field biologists determined the cavities were not formed by RCW as the species exclusively excavates cavities in living pine trees. See the photographic log for representative photographs of the area.

### **4.0 Qualifications**

The following personnel were responsible for conducting this survey.

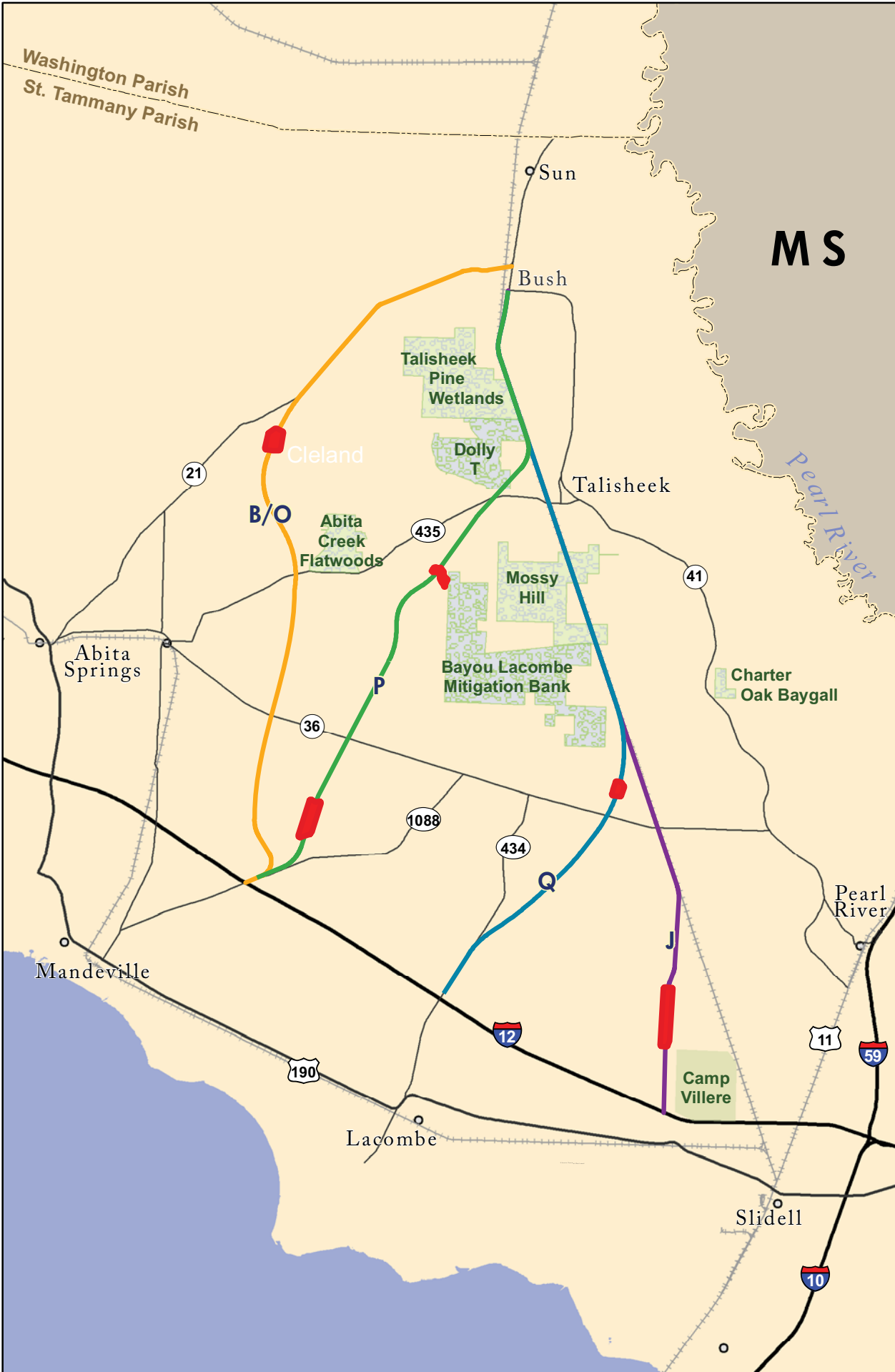
<b>Personnel</b>	<b>Discipline</b>	<b>Experience</b>	<b>Role</b>
Benjamin Richard	Ecology/Biology	6 years of biological studies and T&E surveys	Environmental scientist, Lead field reconnaissance, report preparation
Marcus Colligan	Ecology/Biology	3 years of biological studies	Field reconnaissance and report preparation

### **5.0 References**

CEMVN (U.S. Army Corps of Engineers, New Orleans District). 2008. Preliminary Environmental Assessment: Interstate 12 to Bush, Louisiana Proposed Highway, Application Number: MVN-2006-0037. August 21, 2008.

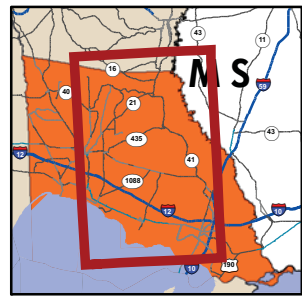
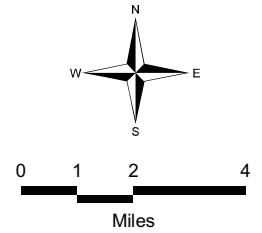
USFWS (U.S. Fish and Wildlife Service). 2003. *Recovery plan for the red-cockaded woodpecker (Picoides borealis)*: second revision. Appendix 4: Survey Protocol. US Fish and Wildlife Service, Atlanta, GA.

## **FIGURES**



**LEGEND**

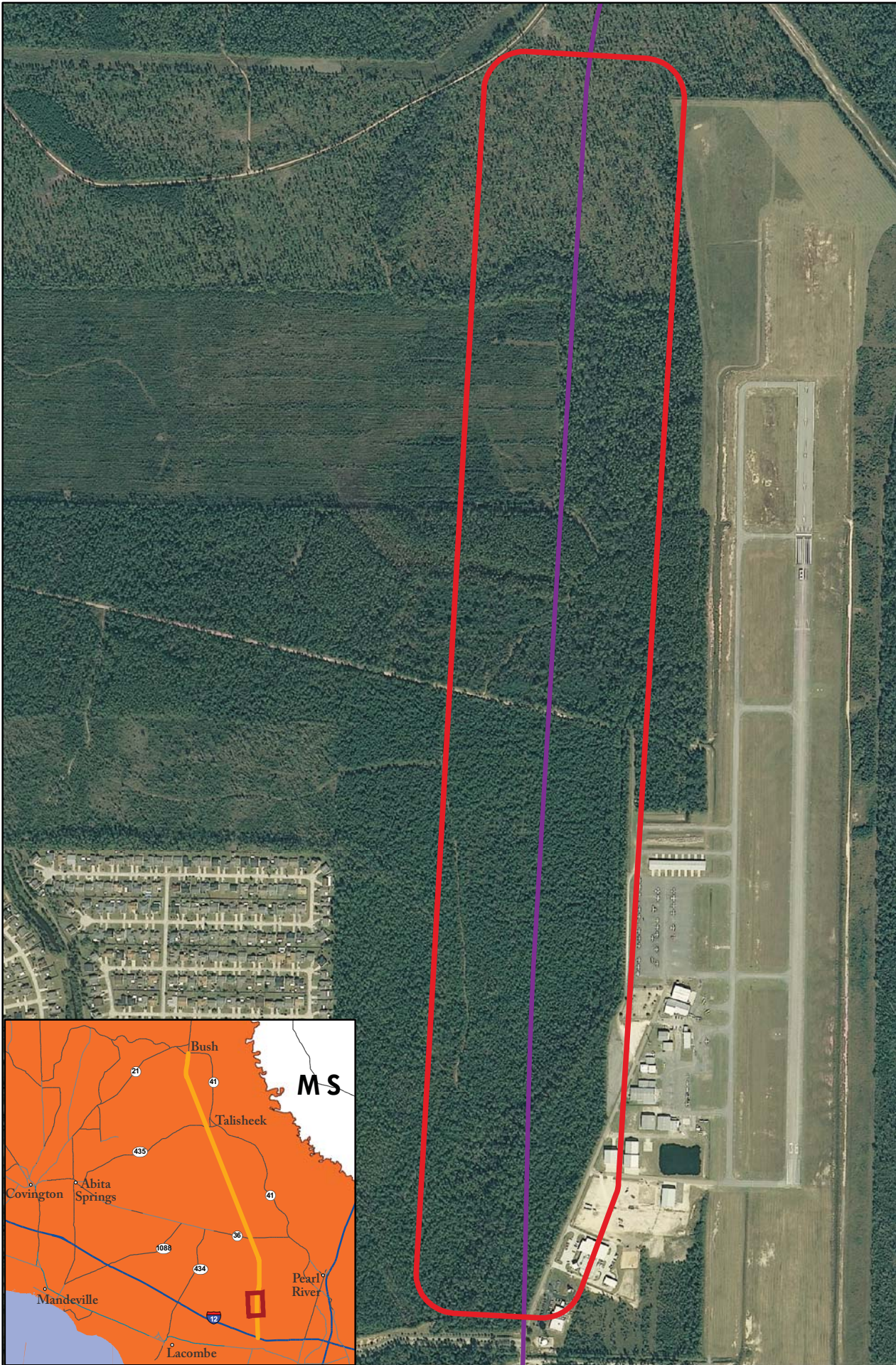
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- Mitigation Bank
- Parish Line
- Interstate
- US Highway
- State Highway
- Railroad Corridor
- Waterbodies



**US Army Corps of Engineers**  
New Orleans District



Source: 2008 DOQQ



**LEGEND**

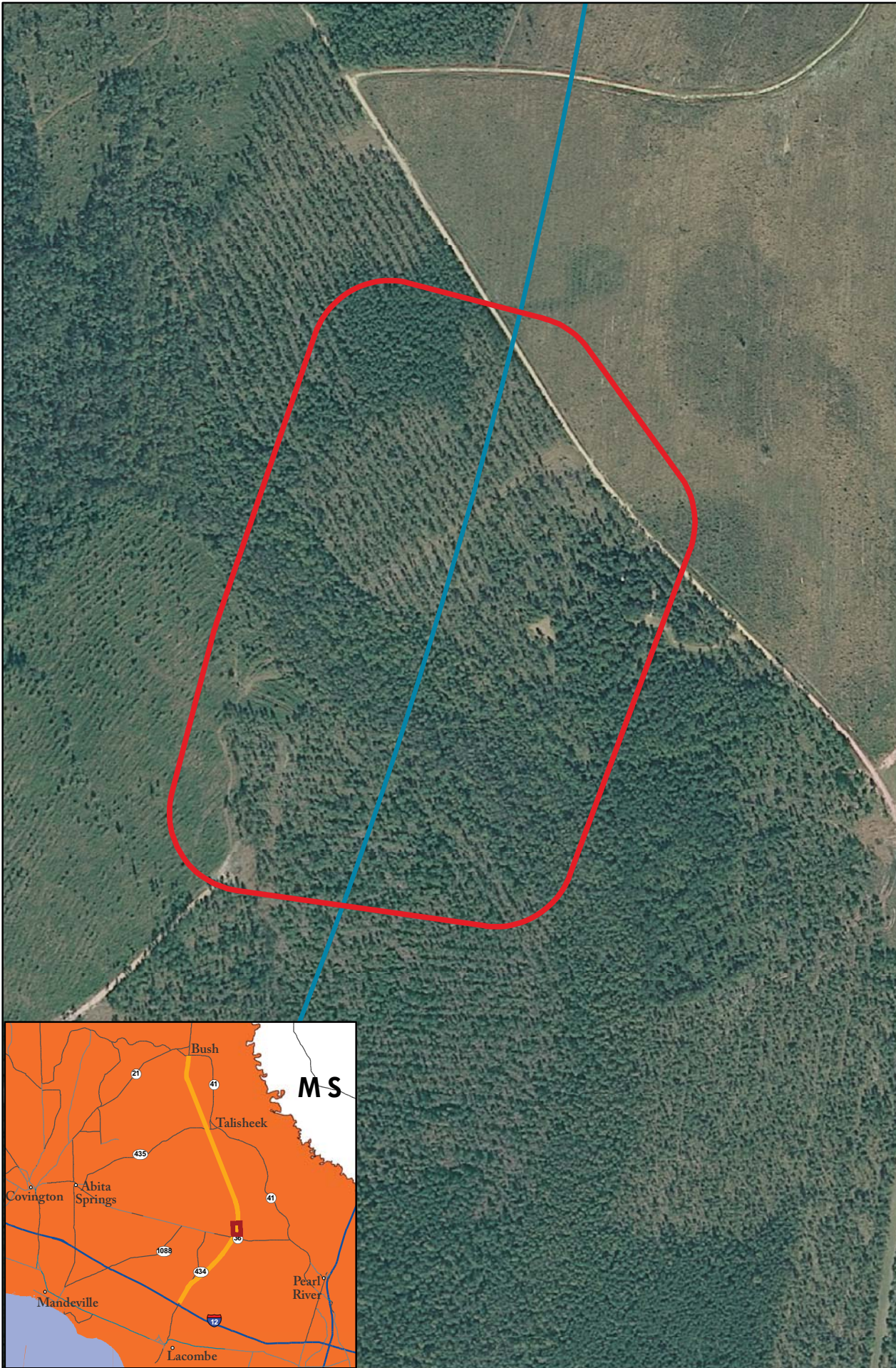
- Area Surveyed
- Alternative J

0 300 600 1,200  
Feet


**LOCATION**


**US Army Corps of Engineers**  
New Orleans District

Source: 2008 DOQQ



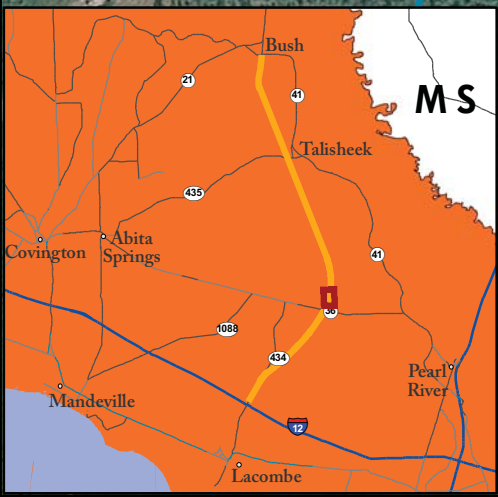
**LEGEND**

-  Area Surveyed
-  Alternative Q



0 150 300 600  
Feet

**LOCATION**



MS

Bush  
Talisheek  
Covington  
Abita Springs  
Mandeville  
Lacombe  
Pearl River

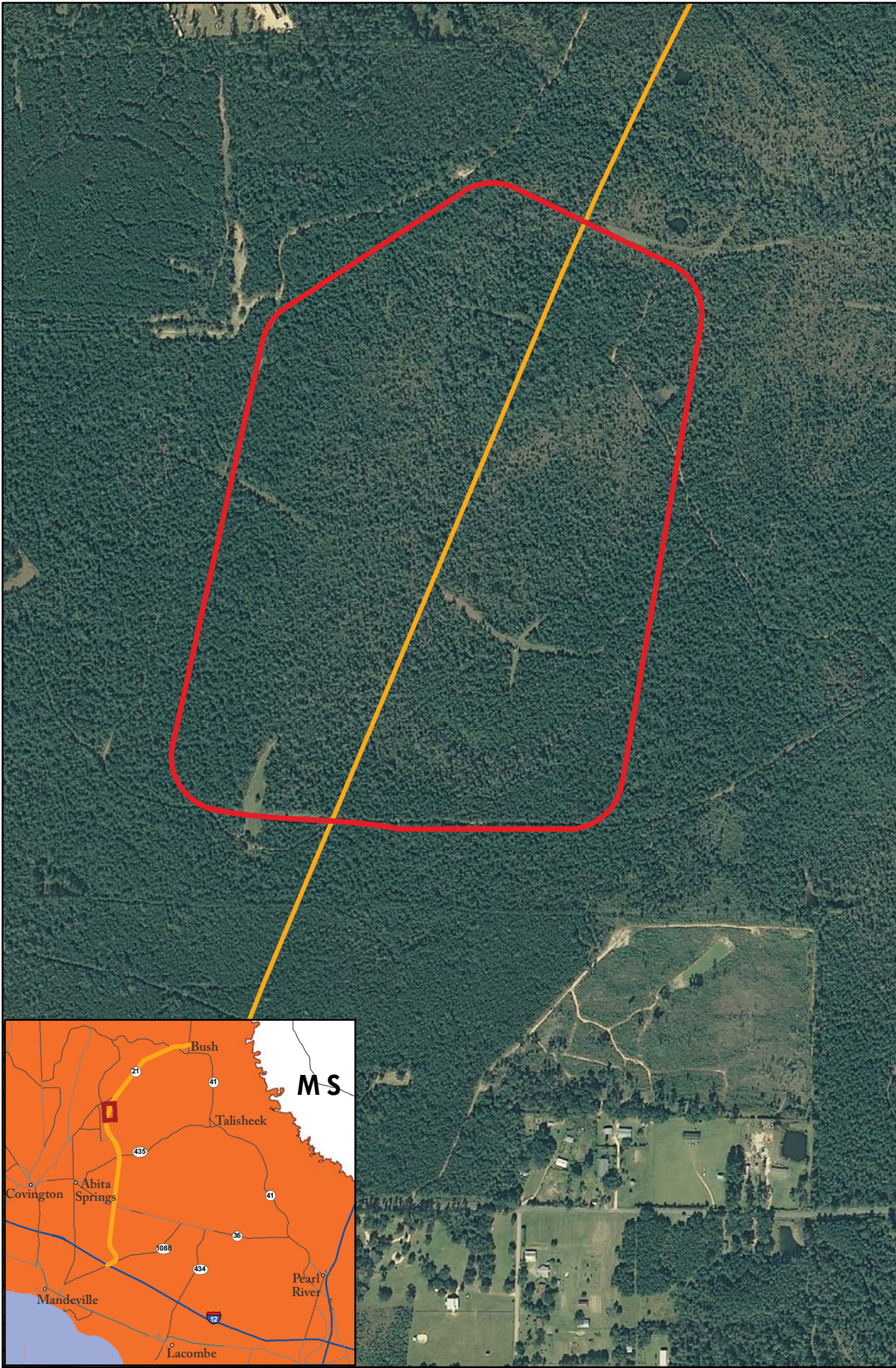
21, 41, 435, 1088, 434, 12, 36

Source: 2008 DOQQ




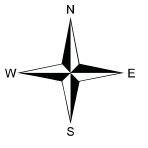
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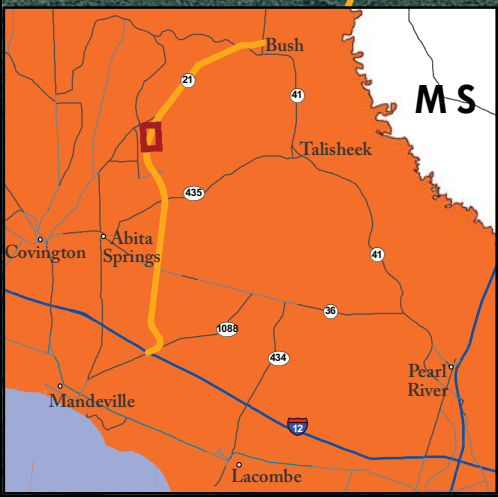
**LEGEND**

-  Area Surveyed
-  Alternative B/O



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Feet

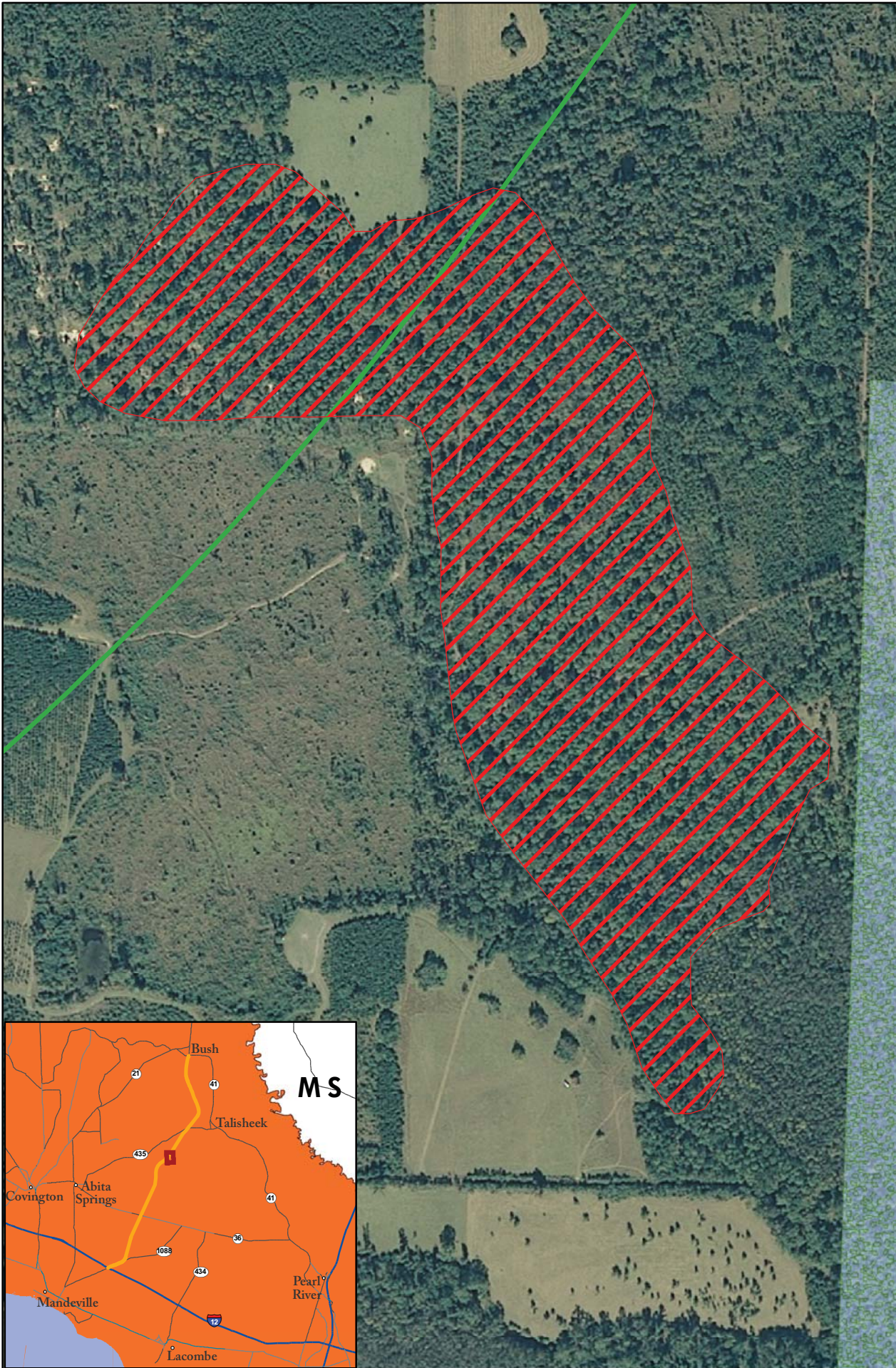
**LOCATION**





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Source: 2008 DOQQ



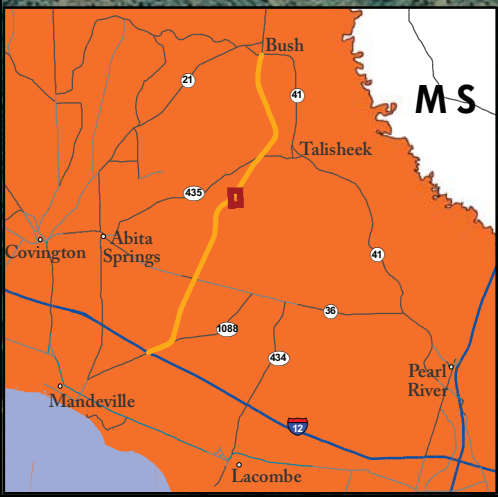
**LEGEND**

-  RCW Foraging Habitat
-  Alternative P



0 125 250 500  
Feet

**LOCATION**

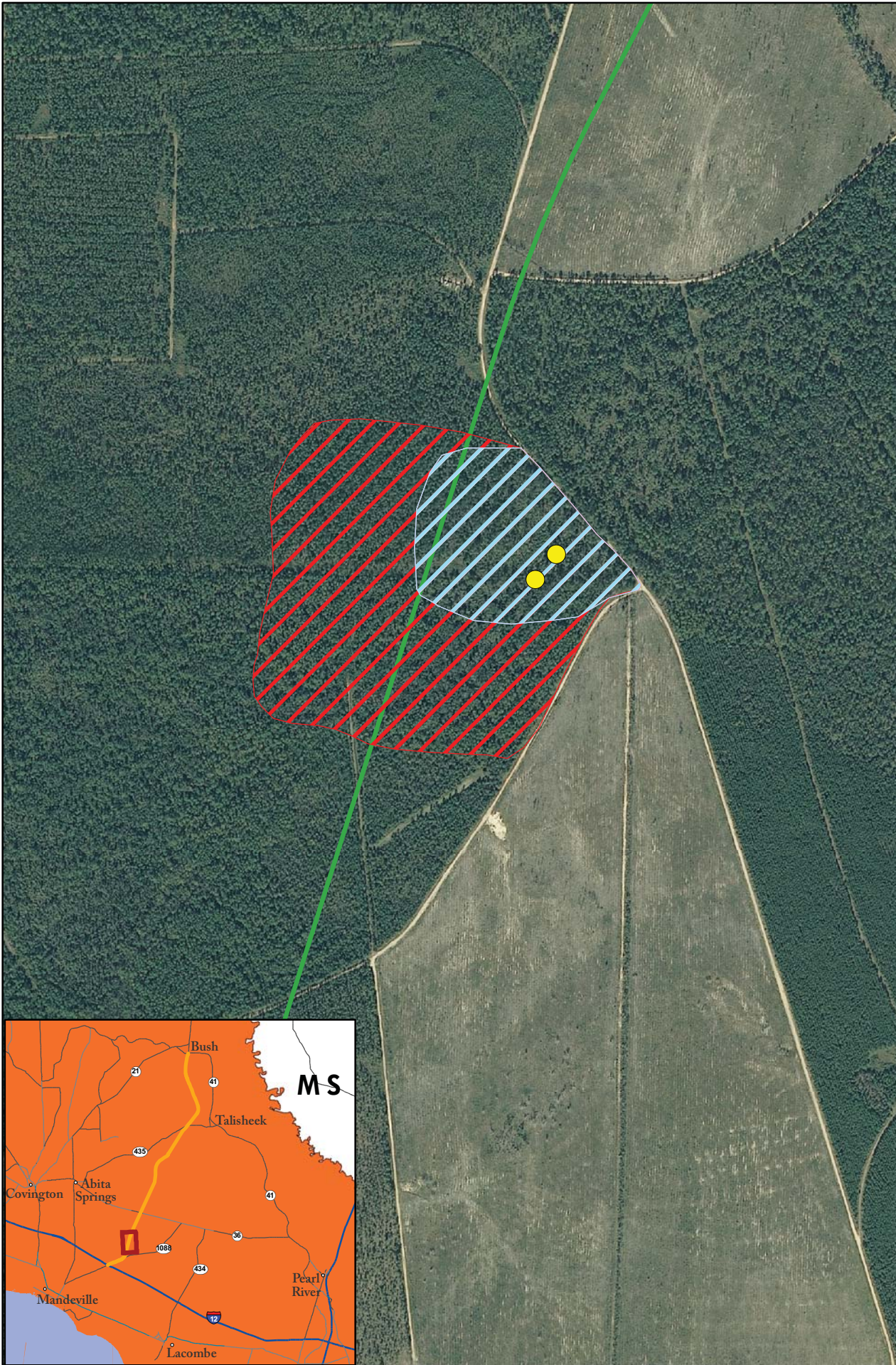


Source: 2008 DOQQ







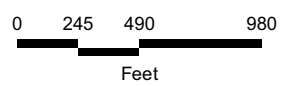
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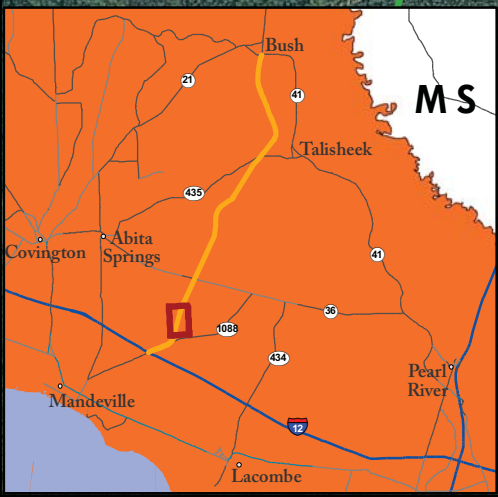


**LEGEND**

-  RCW Foraging Habitat
-  Potential RCW Nesting Habitat
-  Trees with Cavities
-  Alternative P



**LOCATION**



Source: 2008 DOQQ



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New Orleans District





## **PHOTOGRAPHIC DOCUMENTATION**



**Photographic Documentation**  
**I-12 to Bush: Red-cockaded Woodpecker field survey**  
**St. Tammany Parish, LA**

**Photo: 1**

Alternative J: Pine stand investigated, Area 1



**Photo: 2**

Alternative J: Pine stand investigated, Area 2





**Photographic Documentation**  
**I-12 to Bush: Red-cockaded Woodpecker field survey**  
**St. Tammany Parish, LA**

**Photo: 3**

Alternative Q: Pine stand investigated



**Photo: 4**

Alternative B/O: Pine stand investigated





**Photographic Documentation**  
**I-12 to Bush: Red-cockaded Woodpeck field survey**  
**St. Tammany Parish, LA**

**Photo: 5**

Alternative P: Pine stand investigated, Northern Area



**Photo: 6**

Alternative P: Pine stand investigated, Northern Area





**Photographic Documentation**  
**I-12 to Bush: Red-cockaded Woodpecker field survey**  
**St. Tammany Parish, LA**

**Photo: 7**

Alternative P: Pine stand investigated, Southern area foraging habitat



**Photo: 8**

Alternative P: Pine stand investigated, Southern area nesting habitat

