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Biological Resources and Wetland Findings Report

Stage 1 Environmental Assessment/
Line and Grade Study
LA 434 Corridor
St. Tammany Parish, Louisiana
RPC Task LA434EA (H.004981)

December 12, 2014

ARCADIS

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New Orleans Regional Planning Commission

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1. Introduction

The New Orleans Regional Planning Commission, in cooperation with the Louisiana Department of Transportation and Development (LADOTD) proposes widening Louisiana Highway 434 (LA 434) from LA 36 south to its junction with the proposed LA 3241 (Alternative Q from the I-12 to Bush Environmental Impact Statement [EIS]) (Figure 1). The length of roadway improvements is approximately 4.5 miles and includes replacement of the bridge over Bayou Lacombe in St. Tammany Parish, Louisiana. The proposed project will improve existing roadway infrastructure and require additional right-of-way (ROW).

ARCADIS U.S., Inc., performed a study to document existing biological resources and describe the general quality of wetlands within the Study Area as part of the Environmental Assessment (EA). This Biological Resources and Wetland Findings Report is a supporting document to the EA prepared for the project.

2. Study Area

The Study Area for the biological and wetland resources review, investigation, and reporting is consistent with the Study Area established for the EA and is generally 300 feet wide and extends south along LA 434 from LA 36 to the proposed intersection of LA 434 with LA 3241 in St. Tammany Parish, Louisiana. The Study Area is located to the north of Interstate 12 (I-12), east of LA 41, west of LA 1088, and south of LA 36 in St. Tammany Parish, Louisiana. Limits of construction for LA 434 extend south from LA 36 to Vortisch Road. LA 434 then narrows to and will remain a two-lane roadway until the first segment of LA 3241 is constructed.

The Study Area comprises approximately 160 acres. The dominant land use is transportation with some residential surrounded by undeveloped woodlands. The St. Tammany Parish Southeast Quadrant Land Use Map (ND 2025 Existing Land Use Patterns Map [2005]) classifies land use in the Study Area as residential.

3. Study Area Characteristics

The Study Area is located within the Gulf Coast Flatwoods U.S. Environmental Protection Agency (USEPA) Level IV Ecoregion. This ecoregion is described as having deltaic deposits composed of Quaternary-age sands and clays. Much of the landscape in this ecoregion is now in mixed forest or pine plantations, while some land with better drainage has been cleared for pasture or crops. Soils within the Study Area are a mix of poorly to moderately well-drained Entisols, Alfisols, and Ultisols with silty and fine sandy loam surfaces (Daigle et al. 2006) and are primarily composed of the

Myatt-Stough-Prentiss map unit classified by the U.S. Department of Agriculture (USDA), *Soil Survey of St. Tammany Parish, Louisiana* (1990) (soil survey). This association is located on broad terraces in the southern part of the parish.

The Study Area is located within the Pontchartrain Basin of Louisiana, which is bounded by the state of Mississippi to the north, the Gulf of Mexico to the south, the Mississippi River to the west, and the Pearl River to the east. Bayou Lacombe, which is designated as a scenic river and protected under the Louisiana Scenic Rivers Act of 1988, crosses the Study Area.

According to the Louisiana Oil Spill Coordinator's Office (LOSCO) 2009 Digital Elevation Map (DEM) of Louisiana, topography in the Study Area is associated with the broad flats and low ridges characteristic of the southeastern part of the parish. Elevations across the Study Area decrease from 12 feet at the LA 36/LA 434 intersection to 8 feet at the proposed junction of LA 434 with LA 3241 (LOSCO 2009 DEM).

4. Methodology

4.1 Biological and Ecological

Section 7 of the Endangered Species Act of 1973 (amended) requires that federal agencies ensure any action authorized, funded, or carried out by that agency is not likely to adversely impact threatened or endangered species or result in destruction of critical habitat. A U.S. Fish and Wildlife Service (USFWS), Louisiana Ecological Services Office online pre-development self-assessment was made and a review of the Louisiana Department of Wildlife and Fisheries (LDWF), Louisiana Natural Heritage Program (LNHP; 2009a, b) database was conducted for the Study Area. During field reconnaissance and surveying, best professional judgment of the biological team was used to identify locations that have a high probability of being suitable habitat for species of concern identified to potentially occur within the Study Area.

Biologists conducted field surveys on March 18 and March 19, 2014, to confirm the presence or absence of rare, threatened, endangered, or other federally protected species and federally designated critical habitat.

4.2 Wetlands and Surface Waters

Wetlands are defined by the USEPA and U.S. Army Corps of Engineers (USACE) as "those areas that are inundated or saturated by surface or ground water at a frequency

and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (40 Code of Federal Regulations [CFR] Subpart 230.3 and 33 CFR Subpart 328.3). Any action that proposes to place fill materials into wetlands and other waters of the United States requires a jurisdictional determination from the USACE.

Potential wetland areas were initially identified using the 2009 USGS Slidell, Louisiana, quadrangle map, USGS 2005 color infrared digital ortho-quarter quadrangles, USFWS 2011 National Wetland Inventory (NWI) spatial datasets, LOSCO 2009 DEMs, and the Natural Resources Conservation Service (NRCS) 2009 Soil Survey Geographic database for St. Tammany Parish, Louisiana. Information was entered into a Geographical Information System for the project and used to locate known surface waters and wetlands, to assess the general ecology of the Study Area, and to locate areas with potential for containing jurisdictional wetlands and other waters of the United States.

All wetlands identified within the Study Area were evaluated in accordance with Executive Order 11990, *Protection of Wetlands* (1977), and the technical guidelines and methods for wetland delineations as set forth in the USACE *Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Wetland Delineation Manual* (2010).

According to the 1987 Manual, identification of wetlands is based on a three-factor approach including hydrophytic vegetation, hydric soils, and wetland hydrology.

- Hydrophytic vegetation occurs in areas where the frequency or duration of inundation or soil saturation is sufficient to influence the community of plant species present. For purposes of wetland delineation, emphasis is placed on the assemblage of plant species that exert a controlling influence on the character of the plant community rather than on indicator species.

- A hydric soil, whether drained or undrained, is classified as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

- Areas with characteristics of wetland hydrology are defined as those areas where the presence of water has an overriding influence on the characteristics of vegetation and soils due to anaerobic and reducing conditions. Numerous factors influence the wetness of an area including topography, drainage, permeability, and precipitation. However, common to all wetlands is the presence of water.

The wetland delineation was performed on March 18 and March 19, 2014. Each wetland site was documented with photographs and field notes, and boundaries were delineated and mapped using a Trimble global positioning system unit with sub-meter accuracy. Observations of vegetation, hydrology, soils, and other visible wetland indicators were recorded on *Wetland Determination Forms – Atlantic and Gulf Coastal Plain Region* (Appendix A). Nomenclature and indicator status on the data sheets and in this report follow the updated National Wetlands Plant List for the Atlantic and Gulf Coastal Plain (Lichvar 2013). The NRCS National Wetland Plant List (2013) was also consulted for plant identification purposes.

5. Data and Desktop Survey Findings

The NWI database designated four freshwater forested/shrub wetlands and two freshwater ponds within the Study Area. The NWI wetlands within the Study Area correlate with the DEM dataset. NWI wetlands occur in areas with lower elevation on the DEM dataset. The freshwater ponds are small in area, less than 1 acre, and may have been created for cattle or water drainage and detention purposes. NWI-designated wetlands are depicted on Figure 2.

Soils within the Study Area are primarily composed of the Myatt-Stough-Prentiss, Latonia, and Ouachita & Bibb map units as classified in the parish soil survey (Table 1). This association is located on broad terraces in the southern part of the parish. The Myatt soils are level and poorly drained. The Stough soils are level and somewhat poorly drained, while the Prentiss soils are level, very gently sloping, and moderately well drained. The Latonia and Ouachita & Bibb series are well-drained fine sandy loam and silt loam, respectively (Appendix B). The majority of the soils within the Study Area are classified by the NRCS as non-hydric (Appendix B).

Table 1 Description and Classification of Study Area Soils

Soil Symbol	Soil Name	Percent within Study Area	Hydric
St	Stough Fine Sandy Loam	48	No
Pr	Prentiss Fine Sandy Loam, 0 to 1 Percent Slopes	16	No
My	Myatt Fine Sandy Loam, Frequently Flooded	15	Yes
Lt	Latonia Fine Sandy Loam	12	No
Mt	Myatt Fine Sandy Loam	7	Yes
OB	Ouachita & Bibb Soils Frequently Flooded	1	Yes
W	Water	1	-

Source: NRCS Custom Soil Resource Report for St. Tammany Parish, Louisiana (March 2014; Appendix B).

An LNHP database query for rare animals, plants, and natural communities that exist within St. Tammany Parish returned 154 results, of which 12 are designated as state and/or federal threatened, endangered, or candidate species. Table 2 lists these 12 species, and the complete list is provided in Appendix C.

Table 2 State and Federally Protected Species within St. Tammany Parish, Louisiana.

Animals			
Common Name	**Scientific Name**	**State Status**	**Federal Status**
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	Threatened	Threatened
Alabama Shad	*Alosa alabamae*	-	Candidate
Gopher Tortoise	*Gopherus polyphemus*	Threatened	Threatened
Ringed Map Turtle	*Graptemys oculifera*	Threatened	Threatened
Bald Eagle	*Haliaeetus leucocephalus*	Endangered	Delisted
Pearl Darter	*Percina aurora*	-	Candidate
Red-cockaded Woodpecker	*Picoides borealis*	Endangered	Endangered
Inflated Heelsplitter	*Potamilus inflatus*	Threatened	Threatened
Dusky Gopher Frog	*Rana sevosa*	-	Endangered
Manatee	*Trichechus manatus*	Endangered	Endangered
Louisiana Black Bear	*Ursus americanus luteolus*	Threatened	Threatened
Plants			
Common Name	**Scientific Name**	**State Status**	**Federal Status**
Louisiana Quillwort	*Isoetes louisianensis*	-	Endangered

Source: Louisiana Department of Wildlife and Fisheries, Louisiana Natural Heritage Program 2009a, b.

Because the Gulf sturgeon (*Acipenser oxyrinchus desotoi*), Alabama shad (*Alosa alabamae*), and manatee (*Trichechus manatus*) exist solely within large rivers and bodies of water, they will not be impacted by the proposed project. The Pearl darter (*Percina aurora*), known to exist only within the Pearl and Pascagoula rivers, will also not be impacted by the proposed project. The inflated heelsplitter (*Potamilus inflatus*) requires flowing rivers with stable sand or silt bottoms. It is unlikely that the shallow small stretch of Bayou Lacombe that intersects the project area is suitable habitat for the heelsplitter. Therefore, federal and state protected water-dwelling animal species will not be impacted by the proposed project.

An area approximately 2 miles east of the Study Area is identified as critical habitat for the dusky gopher frog (*Rana sevosa*) by the USFWS and reported in the EIS for the I-12 to Bush project. Typical habitat for the dusky gopher frog is open upland-longleaf pine forests with sandy soils. Temporary ponds are the breeding habitat for the dusky gopher frog (LDWF 2009a). Although the Study Area does not contain sandy soils or open upland-longleaf pine forest, there are two small ponds adjacent to and along the border of the Study Area (shown on Figure 2). Because these ponds are not bordered by typical dusky gopher frog habitat, it is unlikely that they serve as breeding habitat for this species. Therefore, the proposed project will not impact the dusky gopher frog.

The USACE environmental laboratory states that the ringed map turtle (*Graptemys oculifera*) is restricted to the Pearl River and its major tributaries between Mississippi and Louisiana (1998). This small turtle generally feeds on insects, small fish, mollusks, plant material, and small nematodes along the banks of wide rivers with moderate current and an open canopy (LDWF 2009a). For nesting habitat, the ringed map turtle requires gently sloping white sandy beaches or islands that have abundant basking sites such as debris, logs, or brush (USACE 2014). The portion of Bayou Lacombe within the Study Area does not meet any of the above habitat requirements for the ringed map turtle; therefore, the proposed project will not impact the ringed map turtle.

The gopher tortoise (*Gopherus polyphemus*) does not have designated critical habitat near the Study Area. Gopher tortoise habitat consists of upland-longleaf pine forests and mixed pine-hardwood forests with very sandy and well-drained soils. As stated in the parish soil survey, and as observed in the field, the Study Area soils are silty loams and not well drained. Therefore, the Study Area does not contain gopher tortoise habitat and the proposed project will not impact the gopher tortoise.

The Louisiana black bear (*Ursus americanus luteolus*) is primarily restricted to large tracts of densely wooded bottomland hardwoods and swamps. The bears den in large tree cavities, slash piles, thickets, or thick vegetation during the winter (LDWF 2009a). The Louisiana black bear may pass through the project area. However, the forests adjacent to and within the Study Area are young to mature pine plantations, which are not suitable habitat for the Louisiana black bear. The proposed project will not impact the Louisiana black bear.

The Red-cockaded Woodpecker[1] (RCW) (*Picoides borealis*) nests in open, park-like stands of mature pine trees containing little hardwood understory or midstory (Tetra Tech Inc. [Tetra Tech] 2010). The slash pine plantations surrounding the Study Area may one day become suitable habitat for the RCW with proper management. At the time this report was written, the trees in the plantations adjacent to the Study Area ranged in age from approximately 1 to 16 years in the younger stands and more than 30 years in the more mature stands. The age of the stands was estimated by analyzing historical imagery and observing the date at which clear cuts or timber harvest events occurred. After a stand was cleared, pine saplings were planted and aged as the years progressed. LDWF states the RCW typically nests in pine stands that are older than 60 years of age. Pine plantations managed with short rotations are a threat to RCW viability.

The Threatened and Endangered Species Report for the I-12 to Bush EIS found no RCW individuals, nesting cavities, suitable nesting habitat, or foraging habitat along the required ROW for Alternative Q (Tetra Tech 2010). Alternative Q is the closest alignment from the I-12 to Bush EIS to the LA 434 Study Area. Alternative Q diverges away from the Study Area near Vortisch Road and through previously undisturbed forests and intersects LA 36 approximately 2 miles east of the Study Area's northern termini. Due to the following reasons, the proposed project will not impact the RCW:

- Pine stands adjacent to the Study Area are managed with a relatively short duration and do not reach the maturity level favored by RCW;
- The I-12 to Bush EIS found no evidence of RCW nesting or foraging habitat near the Study Area (Tetra Tech 2010); and
- The proposed project will only impact a narrow swath of pine forest abutting the existing highway. Impacts to neighboring pine stands will not be substantial.

The Bald Eagle (*Haliaeetus leucocephalus*) was delisted from the federal List of Endangered and Threatened Species in 2007, but is protected under the Bald and Golden Eagle Protection Act (16 United States Code 6688 et seq.) and is listed as a State Endangered Species by Louisiana. The Bald Eagle typically nests in large cypress trees near water and feeds on fish, carrion, waterfowl, coots, and small rodents in open water (LDFW 2009a). The Study Area does not contain suitable

[1] The construction and spelling of English bird names in this report follow the International Ornithological Committee (IOC) naming conventions. Official English bird names begin with capital letters because it distinguishes taxonomic species from a general description of a bird (e.g. white-throated sparrow is a description; White-throated Sparrow is a taxonomic classification). Ornithologists and biological journals commonly use English bird names with the IOC naming convention when identifying bird species.

habitat for the Bald Eagle and therefore the proposed project will not impact the Bald Eagle.

The Louisiana quillwort (*Isoetes louisianensis*) is a sedge-like plant that grows in and along small streams and backwater swamps. Leaves of the quillwort are weak and droopy and arranged in whorls radiating from a central point (LDWF 2009b). The plant grows in stable sand and gravel bars and moist overflow channels with silty sand substrate, and on low, sloping banks near and below water levels. Ecological constraints such as stream dynamics, moisture, availability, and soil conditions, limit population size and range for the Louisiana quillwort (Larke 1996).

The banks of Bayou Lacombe located under, to the immediate east, and to the west of the existing LA 434 bridge are somewhat sandy and steep sloped. Beyond the existing roadway ROW, the banks continue to be steep sloped with some vegetation along the top of bank. There is no visible accretion of sandy material between the banks of Bayou Lacombe within the Study Area. Because Bayou Lacombe is a scenic river, impacts to the stream from the proposed project will be restricted and will not affect the hydrology, water quality, or substrate stability of the stream bank. Therefore, it is unlikely that the proposed project will have any impacts on the Louisiana Quillwort.

6. Agency Coordination

Section 7 of the Endangered Species Act of 1973 requires that federal agencies ensure any action authorized, funded, or carried out by that agency is not likely to adversely impact threatened or endangered species or result in destruction of critical habitat. Coordination with USFWS, Louisiana Ecological Services Office, and the LNHP was made as part of the Solicitation of Views (SOV) process to determine if known rare, threatened, or endangered species exist within the Study Area.

The USFWS SOV response stated St Tammany Parish is known to be inhabited by the RCW and the dusky gopher frog. If potential nesting or foraging habitat for either species is located within the Study Area, the area should be carefully surveyed by a qualified biologist to confirm the presence or absence of either species. If RCW or dusky gopher frog habitat is found within the Study Area, further coordination with the USFWS will take place. The USFWS SOV response is included in Appendix D.

A query of the USFWS online pre-development self-assessment tool was made. It was concluded that the proposed project will have “no effects” to rare, threatened, or endangered species; critical habitat; or migratory birds. Results from the self-assessment tool are included in Appendix D.

The LNHP office was contacted, through the SOV process, to gather information on designated critical habitat or known populations of T&E species that occur within or adjacent to the Study Area. At the time this report was written, no response to the SOV has been received from LNHP. An LNHP database query for rare animals, plants, and natural communities that exist within St. Tammany Parish was conducted. The results are provided in Appendix C.

Coordination with the USACE, New Orleans District was made as part of the SOV process to determine potential impacts to USACE projects and waters of the United States, including wetlands within the Study Area. The USACE preliminary determination advised that wetland areas that may be subject to the Corps' jurisdiction occur within the Study Area and a Department of the Army permit may be required. The USACE, New Orleans District response is included in Appendix D.

7. Findings

7.1 Biological and Ecological

The Study Area is located within a rural setting and proposed project improvements will primarily occur along the existing LA 434 roadway facility, which is bounded by local government offices, residential development, and undeveloped woodlands. Additional ROW required for roadway widening will include previously disturbed areas and some undisturbed areas. Due to timber harvest rotations on lands surrounding the Study Area, vegetation is comprised of young and semi-mature pine stands and cleared areas. Natural communities within the Study Area include pine flatwoods, bayhead swamp, and mixed pine-hardwoods.

No locations of species of special concern or habitat would be impacted by the proposed project. No secondary impacts to state species of special concern would be anticipated from construction or continued use of the proposed improvements.

7.2 Wetlands and Other Waters of the United States

Following is a summary of the data collected during the field surveys including a description of each sampled wetland, dominant vegetation, soils, hydrology, a recommended Cowardin classification (Cowardin et al. 1979), and potential impacts. Wetland determination forms for each wetland site are included in Appendix A. A photographic log of each sample location is provided in Appendix E. One surface water site (Bayou LaCombe) and 11 wetland sites were identified within the Study Area. The wetland sites are described below and shown in Tables 3 and 4 for Alternatives 1 and 2.

Table 3 Potential Wetland Impacts – Alternative 1

Wetland Area A			
Longitude	Latitude	Estimated Cowardin Classification	Area (acres)
-89.895545	30.396539	PFO4	1.72
-89.895209	30.393110	PFO4	0.58
-89.894864	30.393214	PFO4	0.05
-89.894718	30.391899	PFO4	0.08
-89.900072	30.382446	PFO4	0.13
		Total Wetland Area A	**2.56**
Wetland Area B			
Longitude	Latitude	Estimated Cowardin Classification	Area (acres)
-89.886254	30.426582	PFO4	0.76
-89.886632	30.424313	PFO4	2.10
-89.890740	30.414450	PFO4	1.53
-89.891576	30.413327	PFO4	0.08
-89.892903	30.411839	PFO4	1.94
		Total Wetland Area B	**6.41**
		TOTAL	**8.97**

Table 4 Potential Wetland Impacts – Alternative 2

Wetland Area A			
Longitude	Latitude	Estimated Cowardin Classification	Area (acres)
-89.886178	30.426487	PFO4	0.41
-89.886549	30.424249	PFO4	1.19
-89.890761	30.414324	PFO4	0.44
-89.891586	30.413282	PFO4	0.07
-89.892739	30.411949	PFO4	0.90
		Total Wetland Area A	**3.01**
Wetland Area B			
Longitude	Latitude	Estimated Cowardin Classification	Area (acres)
-89.895501	30.396.490	PFO4	1.10
-89.895189	30.393271	PFO4	0.37
-89.895051	30.392188	PFO4	0.40
		Total Wetland Area B	**1.87**
		TOTAL	**4.88**

7.2.1 Wetland Area A

Wetland Area A is comprised of six sites identified during the wetland field surveys and includes Sites 1 through 5 and 11. These sites are located south of Sticker Bay Avenue.

Site 1

Site 1 is located south of the St Tammany Park & Ride on the east side of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*), yaupon (*Ilex vomitoria*), red maple (*Acer rubrum*), water oak (*Quercus nigra*), and laurel-leaf greenbrier (*Smilax laurifolia*). Soils are classified as Stough fine sandy loam and are considered non-hydric by the NRCS. However, the soil sample at this location revealed the primary hydric soil indicator redox dark surface was present. Hydrology indicators include surface water with a depth of 2 inches, soil saturation 6 inches from the surface, and water-stained leaves. The site passed the FAC-neutral test. Site 1 may be classified as a palustrine forested, needle-leaved evergreen, temporarily flooded wetland. Although identified as a wetland, Site 1 will not be impacted by the proposed project. This site is located south of the limits of proposed improvements for the build alternatives (Figure 2).

Site 2

Site 2 is located in a pine stand north of the St Tammany Parish coroner's office on the east side of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*), red bay (*Persea borbonia*), wax myrtle (*Morella cerifera*), poison ivy (*Toxicodendron radicans*), and laurel-leaf greenbrier (*Smilax laurifolia*). Soils are classified as Stough fine sandy loam and are considered non-hydric by the NRCS. The soil sample at this location revealed the primary hydric soil indicator depleted matrix was present. Hydrology indicators include soil saturation 3 inches from the surface. The site passed the FAC-neutral test. Site 2 may be classified as a palustrine forested, needle-leaved evergreen, temporarily flooded wetland. Although identified as a wetland, Site 2 will not be impacted by the proposed project. This site is located south of the limits of proposed improvements for the build alternatives (Figure 2).

Site 3

Site 3 is located west and across LA 434 from Site 2. Dominant vegetation observed includes slash pine (*Pinus elliottii*), American holly (*Ilex opaca*), red bay (*Persea borbonia*), wax myrtle (*Morella cerifera*), red maple (*Acer rubrum*), gallberry (*Ilex glabra*), and rattan (*Berchemia scandens*). Soils are classified as Stough fine sandy

loam and are considered non-hydric by the NRCS. The soil sample at this location revealed the primary hydric soil indicator depleted matrix was present. Hydrology indicators include drift deposits. The site passed the FAC-neutral test. Site 3 may be classified as a palustrine forested, needle-leaved evergreen, temporarily flooded wetland. Although identified as a wetland, Site 3 will not be impacted by the proposed project. This site is located south of the limits of proposed improvements for the build alternatives (Figure 2).

Site 4

Site 4 is located south of Vortisch Road on the east side of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*) and water oak (*Quercus nigra*). No dominant grass or herb species were observed at this site. The understory was composed of a dense mat of pine needles. Soils are classified as a Myatt fine sandy loam and are considered hydric by the NRCS. A soil sample collected at this location revealed the primary hydric soil indicator redox dark surface was present. Hydrology indicators include soil saturation, oxidized rhizospheres along living roots, and sphagnum moss. The site passed the FAC-neutral test. Site 4 may be classified as a palustrine forested, needle-leaved evergreen wetland. Although identified as a wetland, Site 4 will not be impacted by the proposed project. This site is located south of the limits of proposed improvements for the build alternatives (Figure 2).

Site 5

Site 5 is located north of Sally Welch Road on the east side of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*), cherry bark oak (*Quercus pagoda*), gallberry (*Ilex glabra*), yaupon (*Ilex vomitoria*), laurel-leaf greenbrier (*Smilax laurifolia*), Japanese climbing fern (*Lygodium japonicum*), and rattan (*Berchemia scandens*). Soils are classified as Latonia find sandy loam and are considered non-hydric by the NRCS. A soil sample collected at this location revealed the primary hydric soil indicator redox depressions was present. It was noted that this site has moist, but not saturated, soils. The FAC-neutral test, a secondary indicator, was positive. Because the USACE requires a minimum of two secondary indicators for wetland hydrology, Site 5 cannot be classified as a wetland. Based on field observations, Site 5 is likely a transition point between wetland and upland.

Site 11

Site 11 is located south of Vortisch Road and north of D'Antonio Road on the west side of LA 434. Dominant vegetation includes water oak (*Quercus nigra*), swamp privet (*Forestiera acuminata*), yaupon (*Ilex vomitoria*), and laurel leaf greenbrier (*Smilax*

laurifolia). Soils are classified as a Stough fine sandy loam and are considered non-hydric by the NRCS. A soil sample collected at this location revealed the primary hydric soil indicator depleted below dark surface was present. No primary wetland hydrology indicators were observed. The site passed the FAC-neutral test, a secondary indicator. Because the USACE requires a minimum of two secondary indicators for wetland hydrology, Site 11 cannot be classified as a wetland.

7.2.2 Wetland Area B

Wetland Area B is comprised of five sites identified during the wetland field surveys and includes Sites 6 through 10. These sites are located north of Sticker Bay Avenue.

Site 6

Site 6 is located north of Sticker Bay Road, east of LA 434, and south of the high-pressure pipeline that crosses the Study Area from east to west. Dominant vegetation observed includes slash pine (*Pinus elliottii*), gallberry (*Ilex glabra*), wax myrtle (*Morella cerifera*), and broom-sedge (*Andropogon virginicus*). Soils are classified as Stough fine sandy loam and are considered non-hydric by the NRCS. A soil sample collected at this location revealed the primary hydric soil indicator depleted dark surface was present. It was noted that this site has moist, but not saturated, soils. No primary wetland hydrology indicators were observed. The site passed the FAC-neutral test, a secondary indicator. Because the USACE requires a minimum of two secondary indicators for wetland hydrology, Site 6 cannot be classified as a wetland.

Site 7

Site 7 is located south of Marshall Vaughn Road, north of the high-pressure pipeline crossing the Study Area, and east of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*), red bay (*Persea borbonia*), gallberry (*Ilex glabra*), highbush blueberry (*Vaccinium corymbosum*), and laurel-leaf greenbrier (*Smilax laurifolia*). Soils are classified as Stough fine sandy loam and are considered non-hydric by the NRCS. A soil sample collected at this location revealed the primary hydric soil indicators depleted below dark surface and depleted dark surface were present. Hydrology indicators include a high water table at 13 inches from the surface and soil saturation 8 inches from the surface. The site passed the FAC-neutral test. Site 7 may be classified as palustrine forested, needle-leaved evergreen wetland. Potential impacts to Site 7 are likely to occur based on build alternative improvements

Site 8

Site 8 is the northernmost site located approximately 0.5 mile south of LA 36 and east of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*), wax myrtle (*Morella cerifera*), rattan (*Berchemia scandens*), and laurel-leaf greenbrier (*Smilax laurifolia*). Soils are classified as Myatt fine sandy loam, frequently flooded, and are considered hydric by the NRCS. A soil sample collected at this location revealed the hydric soil indicator redox dark surface was present. No primary wetland hydrology indicators were observed. The site passed the FAC-neutral test, a secondary indicator. Because the USACE requires a minimum of two secondary indicators for wetland hydrology, Site 8 cannot be classified as a wetland.

Site 9

Site 9 is the northernmost site located approximately 0.25 mile south of LA 36 and west of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*), red maple (*Acer rubrum*), gallberry (*Ilex glabra*), wax myrtle (*Morella cerifera*), broom sedge (*Andropogon virginicus*), Carolina jessamine (*Gelsemium sempervirens*), and laurel leaf greenbrier (*Smilax laurifolia*). Soils are classified as Latonia fine sandy loam and are considered non-hydric by the NRCS. A soil sample collected at this location revealed the primary hydric soil indicator redox dark surface was present. Hydrology indicators include soil saturation 6 inches from the surface. The site passed the FAC-neutral test. Site 9 may be classified as a palustrine forested, needle-leaved evergreen wetland. Potential impacts to Site 9 are likely to occur based on build alternative improvements.

Site 10

Site 10 is located north of Backes Lane and south of the high-pressure pipeline crossing the Study Area on the west side of LA 434. Dominant vegetation observed includes slash pine (*Pinus elliottii*), redbay (*Persea borbonia*), water oak (*Quercus nigra*), and gallberry (*Ilex glabra*). Soils are classified as Stough fine sandy loam and are considered non-hydric by the NRCS. A soil sample collected at this location revealed the primary hydric soil indicator depleted matrix was present. Hydrology indicators include a high water table, soil saturation, and oxidized rhizospheres along living roots. The site passed the FAC-neutral test. Site 10 may be classified as palustrine forested, needle-leaved evergreen wetland. Potential impacts to Site 10 are likely to occur based on build alternative improvements. Surface Waters

The Study Area encompasses a small stretch of Bayou Lacombe, which is protected under the Louisiana Scenic Rivers Act (Revised Statute 56:1856 Acts 1988, No 947,

Sec 1) from its headwaters to Lake Pontchartrain. The Louisiana Scenic Rivers Act prohibits channelization, clearing and snagging, channel realignment, and reservoir construction of those rivers and streams included within the scenic rivers system. LDWF recommends implementation of its best management practices (BMPs) during all construction and planning activities. When BMPs are applied correctly, they are effective at minimizing adverse impacts of development activities. Using BMPs can ensure that wilderness qualities, scenic beauties, and ecological regimes of streams and riparian areas are preserved, protected, and enhanced (LDWF 2014).

Potential impacts to surface waters may result from the build alternatives including replacement of the existing bridge to meet the proposed roadway widening in the build alternatives. The existing two-lane bridge crossing Bayou Lacombe is a treated timber trestle bridge with six bents and thirty columns. It is anticipated that surface water impacts will occur from build alternatives at the proposed column locations. The no-build alternative will have no impact to surface waters located within the Study Area.

7.3 Wetland Function and Value

Not all wetlands perform all functions nor do they perform all functions equally well. The location and size of a wetland help to determine what functions it may or may not perform. Other factors aid in how well a wetland performs its functions including climatic conditions, quantity and quality of water entering the wetland, and disturbances or alteration within the wetland or the surrounding ecosystem. Disturbances may be the result of natural conditions, such as an extended drought, or human activities, such as land clearing, dredging, or the introduction of non-native plant or animal species.

Wetlands are not wholly determined by physical features, but as a function of the process or processes that take place within the wetland. Functions can be grouped broadly as related to habitat, hydrology, or water quality.

- Habitat (Hab) – Wetlands are among the most productive habitats in the world, providing food, water, and shelter for fish, shellfish, birds, and mammals. They serve as breeding grounds and nurseries for numerous species, many of which are dependent on wetland habitats for their survival.

- Hydrology (Hyd) – Wetlands regulate the quantity of water that can be stored and released within a watershed. They reduce flood volumes and flow velocities, provide areas for groundwater recharge or discharge, and influence atmospheric processes.

- Water quality (WQ) – Wetlands trap sediment, control pollution, and generate the biochemical processes that take place as water moves through or is retained in the system.

For purposes of evaluating the function and value of the wetlands found within the Study Area, the existing conditions for habitat, hydrology, and water quality are categorized using the following criteria.

- Class 1 – These features are fully functional, with no alterations, and typically have a mature (≥40 years of age) canopy.

- Class 2 – These features have minor aquatic impacts that may naturally recover and typically have a mixed canopy that is 20 to 40 years of age.

- Class 3 – These features have minor aquatic impacts, such as hydrological alterations, that cannot naturally recover and will need human assistance to recover their original functional status.

- Class 4 – These features have major aquatic impacts that will require much human assistance to recover their original functional status. These wetlands may be clear-cut or be associated with a nearby clear-cut and may have early successional growth dominating the wetland area.

- Class 5 – These features have drastic aquatic impacts that have removed most all aquatic functions. Features in this category may include wetlands and other waters that have been drained or that have been detached from their hydrological connections for pine plantations, agriculture, poorly managed development projects, as well as other scenarios. Significant human assistance will be required to recover these wetlands to their original functional status.

7.4 Potential Wetland Impacts

Potential impacts to wetlands from the build alternatives identified for evaluation in the EA are listed in Table 3 and shown on Figures 3 and 4. The no-build alternative will have no impact to wetlands located within the Study Area.

Table 5 Wetland Feature by Type, Condition, and Acres Impacted by Alternative

Feature	Type	Existing Condition	Acres Impacted by Alternative 1	Acres Impacted by Alternative 2
Wetland Area A (Bayou Lacombe & Adjacent Areas	Palustrine Forested Needle-leaved Evergreen	Class 2	2.56	3.01
Wetland Area B (Sites 7, 9, and 10)	Palustrine Forested Needle-leaved Evergreen	Class 2	6.41	1.87
TOTAL ACRES IMPACTED			**8.97**	**4.88**

7.5 Wetland Mitigation

Wetlands lost due to construction of the proposed project would be replaced through mitigation activities. Mitigation includes measures which avoid, minimize, and/or compensate for unavoidable losses to resources that cannot be further minimized. The assessment of mitigation measures (avoidance, minimization, and compensation) is an integral part of the National Environmental Policy Act/Section 404 process. For those impacts that cannot be avoided, other mitigation efforts must be considered. These efforts include minimization of potentially adverse impacts and compensation for those remaining adverse impacts that cannot be reduced any further.

Construction activities associated with the build alternative would impact wetlands and surface waters to varying degrees. Land clearing during construction would remove vegetative cover with the potential to increase surface runoff during storm events leading to erosion and increased sediment deposited in surface waters.

To aid in minimizing such impacts, placement and monitoring of erosion control measures for soil stabilization along with temporary and permanent vegetation measures at the start of, during, and after construction would be incorporated into project construction plans according to LADOTD's standard specifications.

Measures to minimize impacts to wetlands may include limiting clearing of wetland vegetation to the minimum required for construction. Limiting use of wetland areas outside the construction limits for construction support activities (borrow sites, waste sites, storage, parking, access, etc.).

Final compensatory mitigation ratios and requirements for impacted areas classified as jurisdictional will be determined by the USACE New Orleans District through the Section 404 permit process.

The no-build alternative would not impact area wetlands and waters.

LADOTD will mitigate the wetlands being impacted by construction activities for this project by minimizing impacts as listed in the Louisiana Standard Specifications for Roads and Bridges, 2006 edition, and mitigate for lost wetland habitats by reseeding with the appropriate plants and seedlings. In addition, LADOTD will coordinate appropriate mitigation planned with the USACE.

In an effort to minimize impacts resulting from the proposed action, the Department's Standard Specifications require that the contractor take certain measures toward reducing environmental (wetland) impacts. These measures are described in, but not limited to, the following sections:

- Scope of Work - Section 104
- Control of Work - Section 105
- Legal Relations and Responsibility to Public - Section 107
- Clearing and Grubbing -Section 201
- Removal or Relocation of Structures and Obstructions - Section 202
- Excavation and Embankment - Section 203
- Temporary Erosion Control - Section 204

It has been determined that there is no practicable alternative to the proposed construction involving impacts to wetlands and the proposed action includes all practicable measures to minimize harm to wetlands which may result from this project.

8. References

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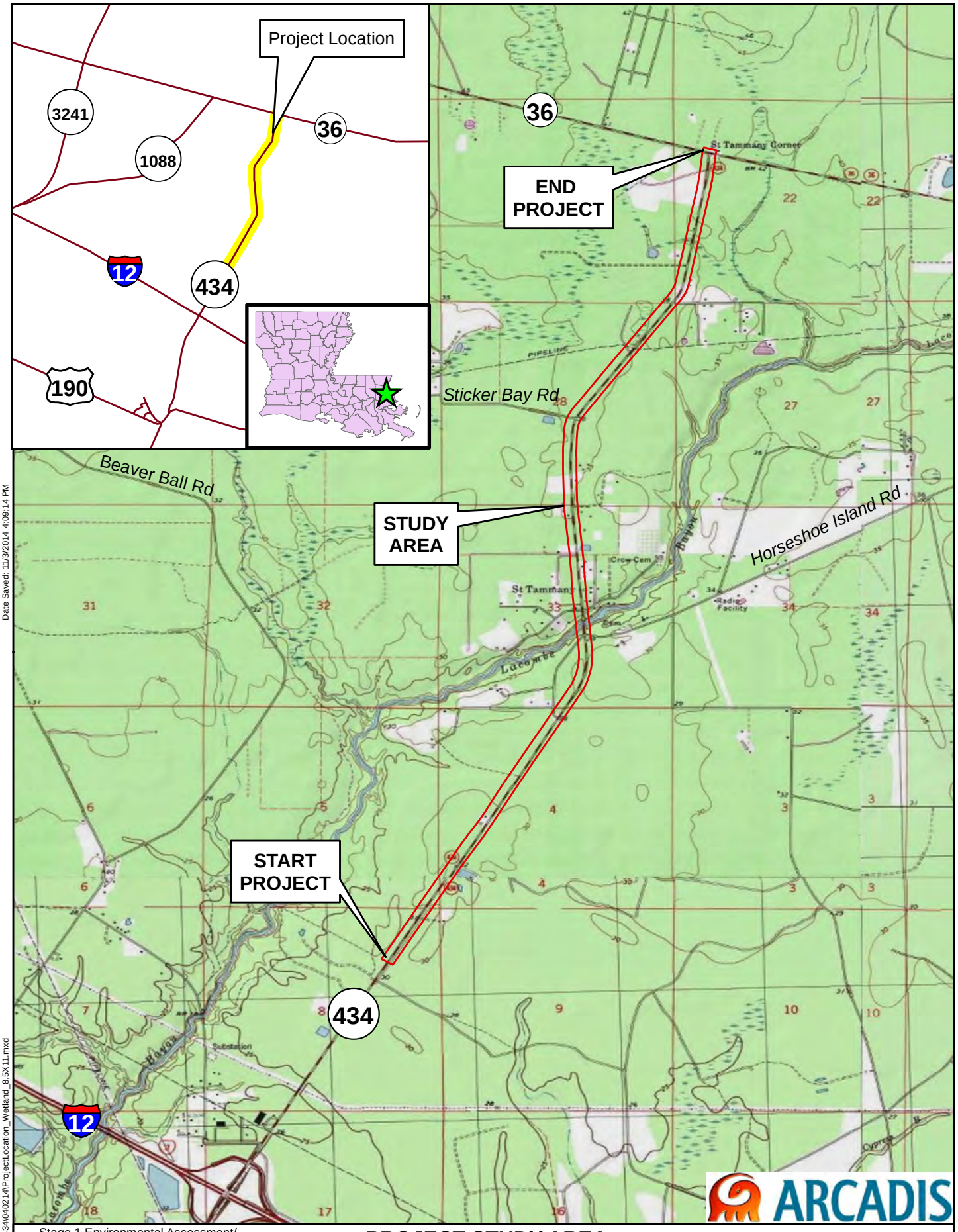
ARCADIS

Figures



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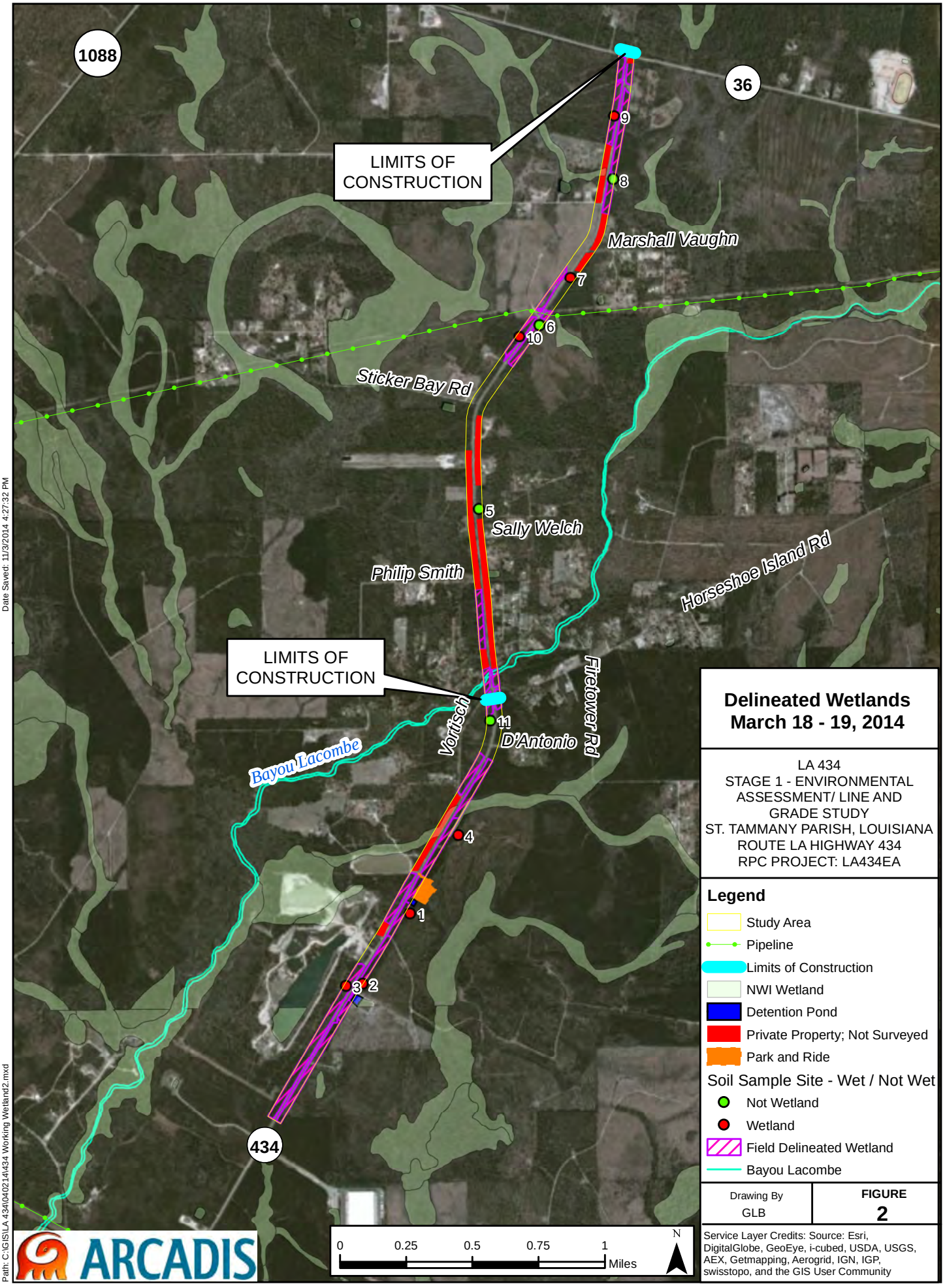
Stage 1 Environmental Assessment/
Line and Grade Study
LA 434 Corridor
St. Tammany Parish
RPC Task LA434EA (H.004981)

PROJECT STUDY AREA AND LOCATION MAP
FIGURE 1



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ARCADIS

Delineated Wetlands
March 18 - 19, 2014

LA 434
STAGE 1 - ENVIRONMENTAL ASSESSMENT/ LINE AND GRADE STUDY
ST. TAMMANY PARISH, LOUISIANA
ROUTE LA HIGHWAY 434
RPC PROJECT: LA434EA

Legend

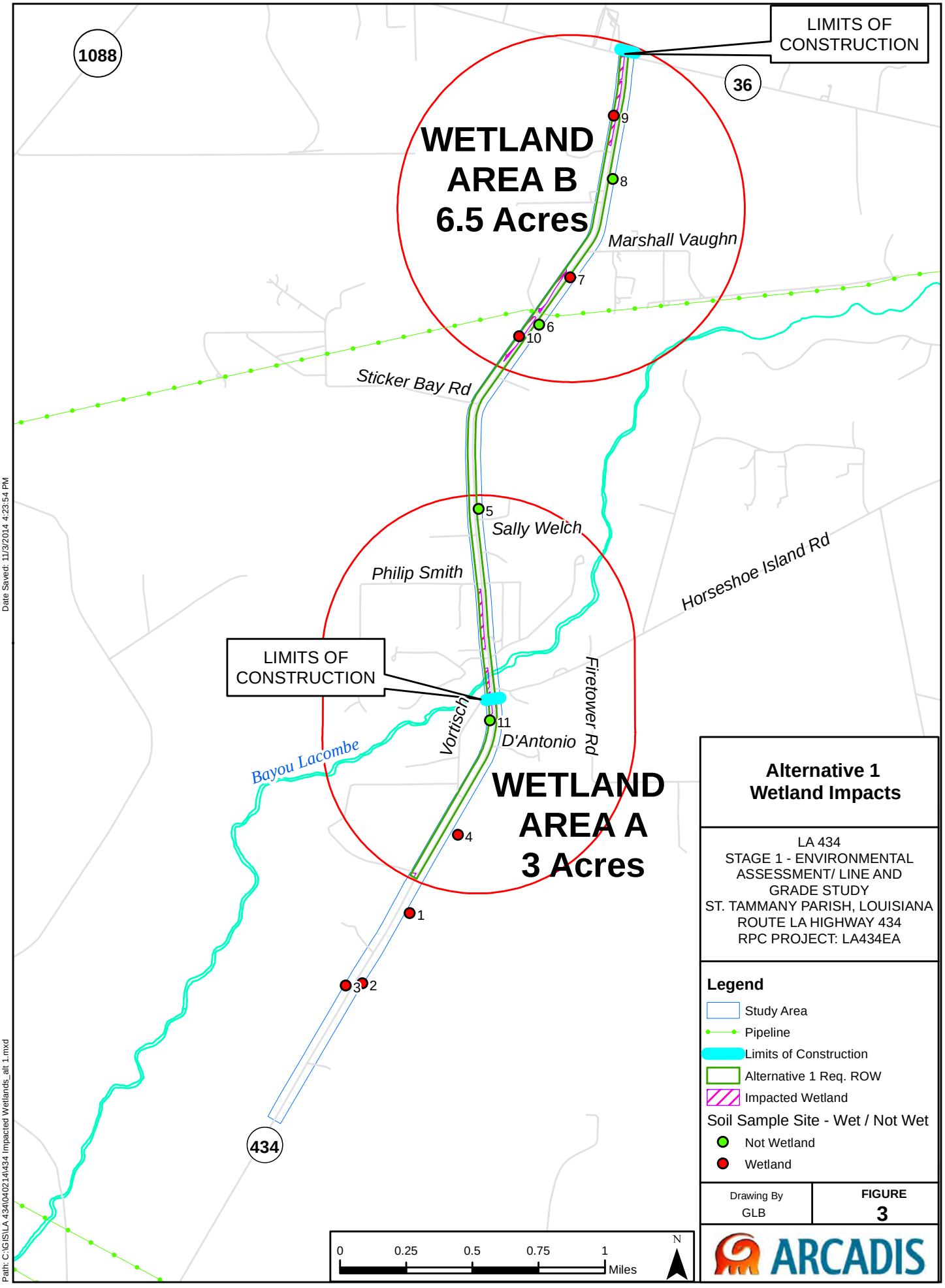
- Study Area
- Pipeline
- Limits of Construction
- NWI Wetland
- Detention Pond
- Private Property; Not Surveyed
- Park and Ride

Soil Sample Site - Wet / Not Wet

- Not Wetland
- Wetland
- Field Delineated Wetland
- Bayou Lacombe

Drawing By	FIGURE
GLB	2

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


1088
36
LIMITS OF CONSTRUCTION
WETLAND AREA B
6.5 Acres
Marshall Vaughn
Sticker Bay Rd
Sally Welch
Philip Smith
Horseshoe Island Rd
LIMITS OF CONSTRUCTION
Vortisch
Firetower Rd
D'Antonio
Bayou Lacombe
WETLAND AREA A
3 Acres
434
9
8
7
6
10
5
11
4
1
3
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Alternative 1
Wetland Impacts
LA 434
STAGE 1 - ENVIRONMENTAL ASSESSMENT/ LINE AND GRADE STUDY
ST. TAMMANY PARISH, LOUISIANA
ROUTE LA HIGHWAY 434
RPC PROJECT: LA434EA
Legend
Study Area
Pipeline
Limits of Construction
Alternative 1 Req. ROW
Impacted Wetland
Soil Sample Site - Wet / Not Wet
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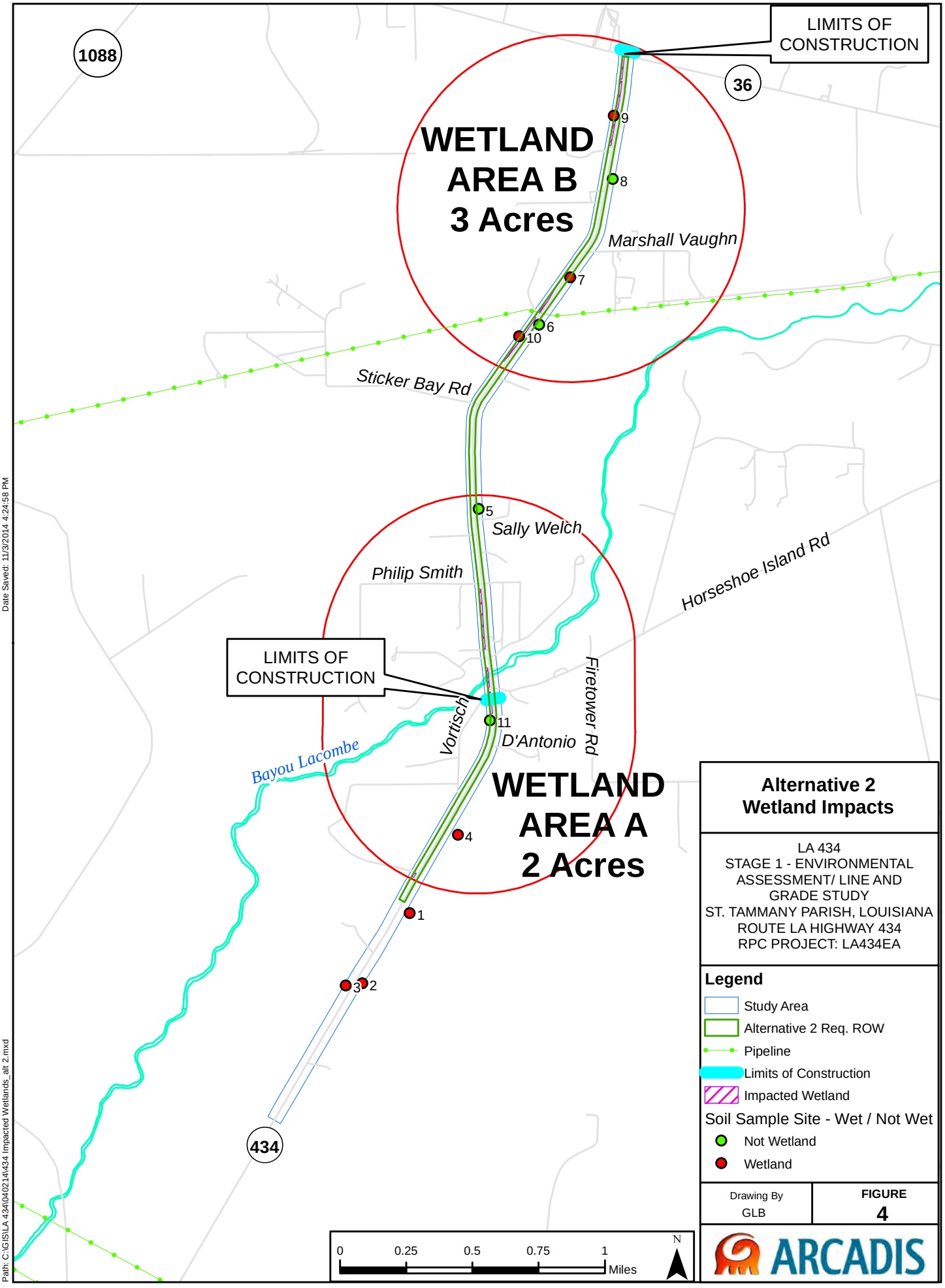
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LIMITS OF CONSTRUCTION
WETLAND AREA B
3 Acres
Marshall Vaughn
Sticker Bay Rd
Sally Welch
Philip Smith
Horseshoe Island Rd
LIMITS OF CONSTRUCTION
Vortisch
Firetower Rd
D'Antonio
Bayou Lacombe
WETLAND AREA A
2 Acres
434
9
8
7
6
10
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11
4
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3
2
Alternative 2
Wetland Impacts
LA 434
STAGE 1 - ENVIRONMENTAL ASSESSMENT/ LINE AND GRADE STUDY
ST. TAMMANY PARISH, LOUISIANA
ROUTE LA HIGHWAY 434
RPC PROJECT: LA434EA
Legend
Study Area
Alternative 2 Req. ROW
Pipeline
Limits of Construction
Impacted Wetland
Soil Sample Site - Wet / Not Wet
Not Wetland
Wetland
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Appendix A

Wetland Delineation Forms – Atlantic and Gulf Coastal Plain Region

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St Tammany Parish Sampling Date: 3/18/14

Applicant/Owner: NO RPC State: LA Sampling Point: 1

Investigator(s): G. Badon / E. Beam Section, Township, Range:

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.380321 Long: -89.900295 Datum: NAD83

Soil Map Unit Name: St - Stough Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) **(LRR U)**
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 2

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 6

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

surface water near pit; rain event 2-3 days prior to site visit; water pooling near the site.

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	80	Y	FACW
2. Acer rubrum	5	N	FAC
3. Quercus nigra	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
50% of total cover: 47.5	20% of total cover: 19		
Sapling/Shrub Stratum (Plot size: 30 ft)			
1. Ilex vomitoria	10	Y	FAC
2. Acer rubrum	5	Y	FAC
3. Quercus nigra	5	Y	FAC
4.			
5.			
6.			
7.			
8.			
	20	= Total Cover	
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		= Total Cover	
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30)			
1. Smilax laurifolia	5	Y	FACW
2.			
3.			
4.			
5.			
	5	= Total Cover	
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

slash pine plantation; almost no ground cover; dense needle mat on ground
FAC-N: 2:0

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5 YR 2.5/1	100						silt clay loam
6-8	7.5 YR 2.5/1	90	7.5 YR 6/6	5	C			silt clay loam
			7.5 YR 5/3	5	D			silt clay loam
9-13	10 YR 5/3	95	10 YR 5/8	5	C			silt clay loam
13-17	10 YR 6/6	80	10 YR 6/3	10	D			silt clay loam
			7 YR 6/8	10	C			silt clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St Tammany Parish Sampling Date: 3/18/14

Applicant/Owner: NO RPC State: LA Sampling Point: 2

Investigator(s): G. Badon / E. Beam Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 1-2

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.376504 Long: -89.903344 Datum: NAD83

Soil Map Unit Name: St - Stough Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

pine plantation, slight slope to northwest direction.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 3

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 2

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	60	Y	FACW
2. Acer rubrum	5	N	FAC
3. Ilex vomitoria	3	N	FAC
4.			
5.			
6.			
7.			
8.			
	68 = Total Cover		
50% of total cover: 34	20% of total cover: 13.6		

Sapling/Shrub Stratum (Plot size: 30)			
1. Persea borbonia	5	Y	FACW
2. Morella cerifera	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		

Herb Stratum (Plot size:)			
1. Toxicodendron radicans	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Woody Vine Stratum (Plot size:)			
1. Smilax laurifolia	3	Y	FACW
2.			
3.			
4.			
5.			
	3 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 3:0

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	10 YR 4/1	100						dark sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

soil is very saturated at bottom of hole

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St Tammany Parish Sampling Date: 3/18/14

Applicant/Owner: NO RPC State: LA Sampling Point: 3

Investigator(s): G. Badon / E. Beam Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 1-2

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.376387 Long: -89.904329 Datum: NAD83

Soil Map Unit Name: St - Stough Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☑ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: 3

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	30	Y	FACW
2. Ilex opaca	10	Y	FAC
3. Ilex glabra	5	N	FACW
4. Quercus nigra	2	N	FAC
5.			
6.			
7.			
8.			
	47	= Total Cover	

50% of total cover: 24 20% of total cover: 9

Sapling/Shrub Stratum (Plot size: 30)			
1. Persea borbonia	10	Y	FACW
2. Morella cerifera	10	Y	FAC
3. Acer rubrum	5	Y	FAC
4.			
5.			
6.			
7.			
8.			
	25	= Total Cover	

50% of total cover: 13 20% of total cover: 5

Herb Stratum (Plot size:)			
1. Ilex glabra	20	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	= Total Cover	

50% of total cover: 10 20% of total cover: 5

Woody Vine Stratum (Plot size:)			
1. Berchemia scandens	5	Y	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	

50% of total cover: 2.5 20% of total cover: 1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 3:0

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10 YR 3/2	100					sandy	
3 - 6	10 YR 4/2	100					sandy	
6 - 13	10 YR 5/2	85	10 YR 6/6	10	D		sandy	
			10 YR 5/8	5	C		sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St Tammany Parish Sampling Date: 3/18/14

Applicant/Owner: NO RPC State: LA Sampling Point: 4

Investigator(s): G. Badon / E. Beam Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): _____

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.384584 Long: -89.7183 Datum: NAD83

Soil Map Unit Name: My - Myatt Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☑ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Oxidized rhizospheres observed along living roots.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: 4

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	50	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: 30 ft)			
1. Quercus nigra	40	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (If observed, list morphological adaptations below).

FAC-N: 1:0

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10 YR 2/1	100						organic top layer
3 - 6	10 YR 3/2	80	10 YR 5/1	15	D			sandy clay loam
			10 YR 6/4	5	C			sandy clay loam
7 - 18	10 YR 6/3	90	10 YR 6/6	10	C			sandy clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

moist soil but not saturated; sandy loam texture.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St. Tammany Sampling Date: 3/19/14

Applicant/Owner: NO RPC State: LA Sampling Point: 5

Investigator(s): G. Badon / S. Rimes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.402439 Long: -89.89562 Datum: NAD 83

Soil Map Unit Name: Lt - Latonia Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

soil is moist but not saturated; site looks like transitional area between wet and non-wet site; no evidence of wetland hydrology observed.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: 5

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	40	Y	FACW
2. Quercus pagoda	15	Y	FACW
3. Quercus nigra	5	N	FAC
4. Magnolia grandiflora	1	N	FAC
5.			
6.			
7.			
8.			
	61	= Total Cover	

50% of total cover: 31 20% of total cover: 12

Sapling/Shrub Stratum (Plot size: 30)			
1. Ilex glabra	40	Y	FACW
2. Ilex vomitoria	15	Y	FAC
3. Quercus nigra	5	N	FAC
4. Persea barbonia	2	N	FACW
5.			
6.			
7.			
8.			
	62	= Total Cover	

50% of total cover: 31 20% of total cover: 12

Herb Stratum (Plot size:)			
1. Ilex glabra	5	Y	FACW
2. Ilex vomitoria	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	= Total Cover	

50% of total cover: 5 20% of total cover: 2

Woody Vine Stratum (Plot size: 30)			
1. Smilax laurifolia	20	Y	FACW
2. Lygodium japonicum	15	Y	FAC
3. Berchemia scandens	10	Y	FAC
4.			
5.			
	45	= Total Cover	

50% of total cover: 23 20% of total cover: 9

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 5:0

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3								leaf litter / organic
3 -18	10 YR 3/2	70	10 YR 5/6	25	C			sandy loam
			10 YR 4/2	5	D			sandy loam
8 -10	10 YR 4/6	100						sandy loam
10 - 16	10 YR 5/8	100						sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☑ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St. Tammany Sampling Date: 3/19/14

Applicant/Owner: NO RPC State: LA Sampling Point: 6

Investigator(s): G. Badon / S. Rimes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.412497 Long: -89.891638 Datum: NAD 83

Soil Map Unit Name: St - Stough Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

slash pine plantation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____ No X	Depth (inches): _____
Water Table Present?	Yes _____ No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____ No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

moist soil, may be wet outside study area; no evidence of wetland hydrology observed inside study area polygon.

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 6

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	80	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 20		
Sapling/Shrub Stratum (Plot size: 30)			
1. Ilex glabra	50	Y	FACW
2. Morella cerifera	30	Y	FAC
3. Ilex opaca	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Herb Stratum (Plot size:)			
1. Andropogon virginicus	90	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 2:0

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	7.5 YR 4/2	80	10 YR 5/6	15	C			sandy loam
			7.5 YR 6/1	5				sandy loam
4 -13	10 YR 5/2	70	10 YR 7/8	15	D			sandy loam
			7.5 YR 5/8	10	C			sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☑ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

moist but not saturated

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: La 434 City/County: St. Tammany Parish Sampling Date: 3/19/14

Applicant/Owner: NO RPC State: LA Sampling Point: 7

Investigator(s): G. Badon / S. Rimes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.41509 Long: -89.889623 Datum: NAD83

Soil Map Unit Name: St - Stough Fine Sandy Loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

roadside between Marshall Vaughn Rd and the pipeline

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes X	No _____	Depth (inches): 13
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 8

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water table at approximately 13-16 inches from surface.

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 7

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	40	Y	FACW
2. Persea borbonia	20	Y	FACW
3. Ilex opaca	15	N	FAC
4. Magnolia grandiflora	10	N	FAC
5.			
6.			
7.			
8.			
	85	= Total Cover	

50% of total cover: 43 20% of total cover: 17

Sapling/Shrub Stratum (Plot size: 30)			
1. Ilex glabra	60	Y	FACW
2. Vaccinium corymbosum	20	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	80	= Total Cover	

50% of total cover: 40 20% of total cover: 20

Herb Stratum (Plot size: 30)			
1. Ilex glabra	20	FACW	Y
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	= Total Cover	

50% of total cover: 10 20% of total cover: 4

Woody Vine Stratum (Plot size: 30)			
1. Smilax laurifolia	15	Y	FACW
2.			
3.			
4.			
5.			
	15	= Total Cover	

50% of total cover: 8 20% of total cover: 3

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 6:0

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 12	7.5 YR 4/2	100						sandy loam
12 - 16	7.5 YR 4/2	70	7.5 YR 6/6	20	C			sandy loam
			7.5 YR 6/1	10	D			sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☑ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St. Tammany Sampling Date: 3/19/14

Applicant/Owner: NO RPC State: LA Sampling Point: 8

Investigator(s): G. Badon / S. Rimes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.420448 Long: -89.886873 Datum: NAD83

Soil Map Unit Name: My - Myatt Fine Sandy Loam, Frequently Flooded NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

dry site and dry crumbly soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: 8

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	50	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)			
1. Morella cerifera	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		

50% of total cover: 15 20% of total cover: 6

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: _____)			
1. Berchemia scandens	5	Y	FAC
2. Smilax laurifolia	3	Y	FACW
3.			
4.			
5.			
	8 = Total Cover		

50% of total cover: 4 20% of total cover: 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (If observed, list morphological adaptations below).

pine plantation, dense pine needle ground cover
FAC-N: 2:0

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	7.5 YR 3/2	100						silty loam
3 -16	10 YR 4/6	100						silty loam very consistent color throughout

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St. Tammany Parish Sampling Date: 3/19/14

Applicant/Owner: NO RPC State: LA Sampling Point: 9

Investigator(s): G. Badon / S. Rimes Section, Township, Range:

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwoods Lat: 30.423914 Long: -89.886748 Datum: NAD83

Soil Map Unit Name: Lt - Latonia Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 6

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: 9

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	15	Y	FACW
2. Acer rubrum	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	25	= Total Cover	

50% of total cover: 13 20% of total cover: 5

Sapling/Shrub Stratum (Plot size: 30)			
1. Ilex glabra	65	Y	FACW
2. Morella cerifera	20	Y	FAC
3. Pinus elliottii	15	N	FACW
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	

50% of total cover: 50 20% of total cover: 20

Herb Stratum (Plot size:)			
1. Andropogon virginicus	95	Y	FAC
2. Sarracenia alata	5	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size:)			
1. Gleseminum sempervirens	15	Y	FAC
2. Smilax laurifolia	10	Y	FACW
3.			
4.			
5.			
	25	= Total Cover	

50% of total cover: 13 20% of total cover: 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 3:0

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10 YR 3/1	100						silty clay loam
9 -16	10 YR 3/1	60	10 YR 5/2	10	D		smooth	silty clay loam
			10 YR 5/8	30	C			silty clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St. Tammany Parish Sampling Date: 3/19/14

Applicant/Owner: NO RPC State: LA Sampling Point: 10

Investigator(s): G. Badon / S. Rimes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwood Lat: 30.41878 Long: -89.89217 Datum: NAD83

Soil Map Unit Name: St - Stough Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes X	No _____	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site located west of LA 434; south of pipeline; north of Stickler Bay Rd.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: 10

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii	15	Y	FACW
2. Persea borbonia	10	Y	FACW
3. Quercus nigra	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
	35 = Total Cover		
50% of total cover: 18	20% of total cover: 7		
Sapling/Shrub Stratum (Plot size: 30)			
1. Ilex glabra	65	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	65 = Total Cover		
50% of total cover: 33	20% of total cover: 13		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 3:0

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	7.5 YR 3/1	100						silt loam
3 -16	10 YR 5/2	60	10 YR 6/1	10		D		silt loam
			10 YR 5/8	30		C		silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: LA 434 City/County: St Tammany Parish Sampling Date: 3/19/14

Applicant/Owner: NO RPC State: LA Sampling Point: 11

Investigator(s): G. Badon / S. Rimes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): T - Eastern gulf coast flatwood Lat: 30.390839 Long: _____ Datum: _____

Soil Map Unit Name: St - Stough Fine Sandy Loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 11

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus nigra	35	Y	FAC
2. Forestiera acuminata	30	Y	OBL
3. Ilex opaca	15	N	FAC
4. Magnolia grandiflora	15	N	FAC
5.			
6.			
7.			
8.			
	95	= Total Cover	

50% of total cover: 46 20% of total cover: 19

Sapling/Shrub Stratum (Plot size: 30)			
1. Ilex vomitoria	25	Y	FAC
2. Crataegus marshalii	5	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	30	= Total Cover	

50% of total cover: 15 20% of total cover: 6

Herb Stratum (Plot size:)			
1. Ilex vomitoria	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	= Total Cover	

50% of total cover: 13 20% of total cover: 5

Woody Vine Stratum (Plot size: 30)			
1. Smilax laurifolia	5	Y	FACW
2.			
3.			
4.			
5.			
	5	= Total Cover	

50% of total cover: 3 20% of total cover: 1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (If observed, list morphological adaptations below).

FAC-N: 2:0

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	10 YR 4/2	100						silty loam
8 - 16	2.5 YR 5/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

ARCADIS

Appendix B

Custom Soil Resource Report for
St. Tammany Parish, Louisiana, and
Hydric Soil List

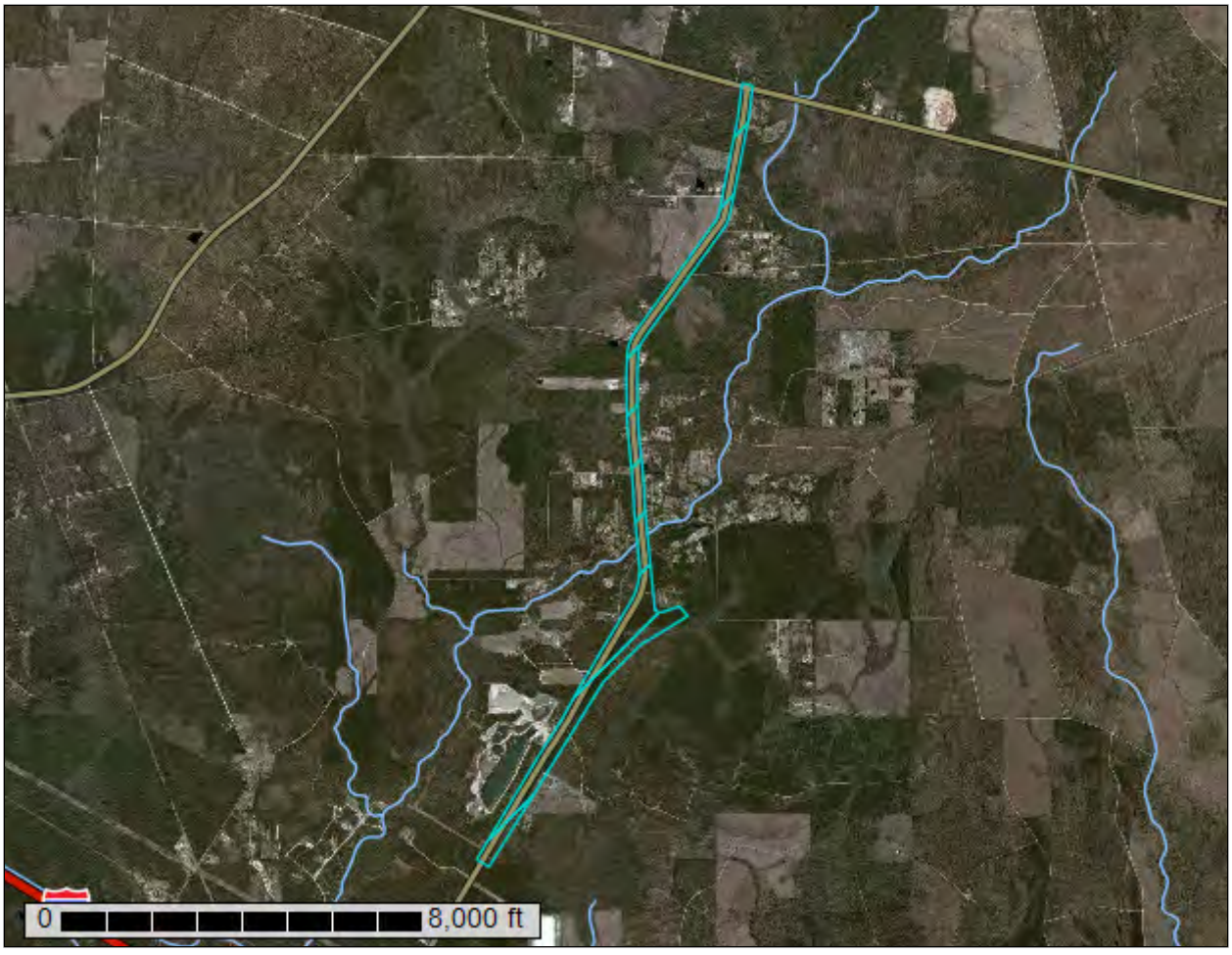
United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for St. Tammany Parish, Louisiana

Stage 1 Environmental Assessment LA 434 RPC Task LA434EA (H.004981)



March 6, 2014

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:38,200 if printed on A portrait (8.5" x 11") sheet.

N

0 500 1000 2000 3000 Meters

0 1500 3000 6000 9000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: St. Tammany Parish, Louisiana
Survey Area Data: Version 7, Dec 9, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 22, 2010—Jun 2, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

St. Tammany Parish, Louisiana (LA103)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Lt	Latonia fine sandy loam	26.3	12.2%
Mt	Myatt fine sandy loam	15.2	7.0%
My	Myatt fine sandy loam, frequently flooded	31.3	14.5%
OB	Ouachita and Bibb soils, frequently flooded	3.8	1.7%
Pr	Prentiss fine sandy loam, 0 to 1 percent slopes	34.8	16.1%
St	Stough fine sandy loam	104.2	48.2%
W	Water	0.8	0.4%
Totals for Area of Interest		**216.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially

where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

St. Tammany Parish, Louisiana

Lt—Latonia fine sandy loam

Map Unit Setting

Mean annual precipitation: 55 to 73 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 219 to 272 days

Map Unit Composition

Latonia and similar soils: 90 percent
Minor components: 10 percent

Description of Latonia

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.1 inches)

Interpretive groups

Farmland classification: All areas are prime farmland
Land capability (nonirrigated): 2s
Hydrologic Soil Group: B

Typical profile

0 to 4 inches: Fine sandy loam
4 to 26 inches: Sandy loam
26 to 62 inches: Loamy sand

Minor Components

Minor components

Percent of map unit: 8 percent

Myatt

Percent of map unit: 2 percent
Landform: Depressions

Mt—Myatt fine sandy loam

Map Unit Setting

Mean annual precipitation: 55 to 73 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 219 to 272 days

Map Unit Composition

Myatt and similar soils: 85 percent
Minor components: 15 percent

Description of Myatt

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Pleistocene fluviomarine deposits

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.5 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 4w
Hydrologic Soil Group: D

Typical profile

0 to 16 inches: Fine sandy loam
16 to 50 inches: Loam
50 to 64 inches: Sandy clay loam

Minor Components

Minor components

Percent of map unit: 15 percent

My—Myatt fine sandy loam, frequently flooded

Map Unit Setting

Mean annual precipitation: 55 to 73 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 219 to 272 days

Map Unit Composition

Myatt and similar soils: 85 percent
Minor components: 15 percent

Description of Myatt

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Pleistocene fluviomarine deposits

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water capacity: High (about 9.6 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 5w
Hydrologic Soil Group: D

Typical profile

0 to 14 inches: Fine sandy loam
14 to 58 inches: Loam
58 to 68 inches: Sandy clay loam

Minor Components

Minor components

Percent of map unit: 15 percent

OB—Ouachita and Bibb soils, frequently flooded

Map Unit Setting

Elevation: 50 to 450 feet
Mean annual precipitation: 55 to 73 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 219 to 272 days

Map Unit Composition

Ouachita and similar soils: 60 percent
Bibb and similar soils: 40 percent

Description of Ouachita

Setting

Landform: Natural levees
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water capacity: High (about 11.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 4w
Hydrologic Soil Group: C

Typical profile

0 to 9 inches: Silt loam
9 to 60 inches: Silt loam

Description of Bibb

Setting

Landform: Swales
Down-slope shape: Concave
Parent material: Loamy alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water capacity: High (about 9.3 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 5w
Hydrologic Soil Group: D

Typical profile
0 to 10 inches: Loam
10 to 60 inches: Loam

Pr—Prentiss fine sandy loam, 0 to 1 percent slopes

Map Unit Setting
Mean annual precipitation: 55 to 73 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 219 to 272 days

Map Unit Composition
Prentiss and similar soils: 95 percent
Minor components: 5 percent

Description of Prentiss

Setting
Landform: Interfluves
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Pleistocene fluviomarine deposits

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.5 inches)

Interpretive groups
Farmland classification: All areas are prime farmland
Land capability (nonirrigated): 2w
Hydrologic Soil Group: C

Typical profile
0 to 25 inches: Fine sandy loam
25 to 62 inches: Loam
62 to 73 inches: Loam

Minor Components

Brimstone
Percent of map unit: 2 percent
Landform: Depressions

Guyton
Percent of map unit: 2 percent
Landform: Depressions

Myatt
Percent of map unit: 1 percent
Landform: Depressions

St—Stough fine sandy loam

Map Unit Setting
Mean annual precipitation: 55 to 73 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 219 to 272 days

Map Unit Composition
Stough and similar soils: 85 percent
Minor components: 15 percent

Description of Stough

Setting
Landform: Ridges on stream terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Pleistocene loamy fluviomarine deposits

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups
Farmland classification: Not prime farmland

Land capability (nonirrigated): 2w
Hydrologic Soil Group: C

Typical profile
0 to 24 inches: Fine sandy loam
24 to 37 inches: Loam
37 to 60 inches: Loam

Minor Components

Minor components
Percent of map unit: 11 percent

Myatt
Percent of map unit: 2 percent
Landform: Depressions

Brimstone
Percent of map unit: 2 percent
Landform: Depressions

W—Water

Map Unit Setting
Mean annual precipitation: 55 to 73 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 219 to 272 days

Map Unit Composition
Water, large: 100 percent

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Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

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Report—Hydric Soil List - All Components

Hydric Soil List - All Components–LA103-St. Tammany Parish, Louisiana					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
Lt: Latonia fine sandy loam	Latonia	90	Stream terraces	No	—
	MINOR COMPONENTS	8	—	No	—
	MYATT	2	Depressions	Yes	2
Mt: Myatt fine sandy loam	Myatt	85	Stream terraces	Yes	2
	MINOR COMPONENTS	15	—	No	—
My: Myatt fine sandy loam, frequently flooded	Myatt	85	Stream terraces	Yes	2
	MINOR COMPONENTS	15	—	No	—
OB: Ouachita and Bibb soils, frequently flooded	Ouachita	60	Natural levees	Yes	4
	Bibb	40	Swales	Yes	2,4
Pr: Prentiss fine sandy loam, 0 to 1 percent slopes	Prentiss	95	Interfluves	No	—
	BRIMSTONE	2	Depressions	Yes	2
	GUYTON	2	Depressions	Yes	2
	MYATT	1	Depressions	Yes	2
St: Stough fine sandy loam	Stough	85	Ridges on stream terraces	No	—
	MINOR COMPONENTS	11	—	No	—
	MYATT	2	Depressions	Yes	2
	BRIMSTONE	2	Depressions	Yes	2
W: Water	Water-Large	100	—	No	—

Data Source Information

Soil Survey Area: St. Tammany Parish, Louisiana
Survey Area Data: Version 7, Dec 9, 2013

ARCADIS

Appendix C

Louisiana Department of Wildlife
and Fisheries Species by Parish List

Published on *Louisiana Department of Wildlife and Fisheries* (http://www.wlf.louisiana.gov)

Species by Parish List

 [1] Printable Version [2]

Explanation of Ranking Categories Employed by Natural Heritage Programs Nationwide

Federal Ranks (USESA FIELD):

Global Element Ranks:

State Element Ranks:

State Protection Status:

Filter By Parish St. Tammany **Filter by Type** Rare Animal Species Apply

Rare Animal Species

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Acipenser oxyrinchus desotoi [9]	Gulf Sturgeon	S1S2	G3T2	T	T	Acipenser oxyrinchus desotoi [10]	Ascension, Livingston, Orleans, St. Bernard, St. Tammany, Tangipahoa, Washington
Aimophila aestivalis [11]	Bachman's Sparrow	S3	G3			Aimophila aestivalis [12]	Allen, Beauregard, Bienville, Bossier, Calcasieu, Claiborne, Grant, Jackson, Livingston, Natchitoches, Rapides, Sabine, St. Tammany, Tangipahoa, Vernon
Alosa alabamae [13]	Alabama Shad	S1	G3		C	Alosa alabamae [14]	East Baton Rouge, East Feliciana,

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
							Livingston, St. Helena, St. Tammany, Tangipahoa, Washington
Ambystoma tigrinum [15]	Eastern Tiger Salamander	S1	G5	Prohibited		Ambystoma tigrinum [16]	Caddo, St. Tammany, Vernon
Crystallaria asprella [17]	Crystal Darter	S2S3	G3				Bossier, Caddo, Morehouse, Ouachita, St. Tammany, Union, Washington
Cycleptus meridionalis [18]	Southeastern Blue Sucker	S1	G3G4			Cycleptus meridionalis [19]	St. Tammany, Washington
Elanoides forficatus [20]	American Swallow-tailed Kite	S1S2B	G5			Elanoides forficatus [21]	Beauregard, East Baton Rouge, Iberville, Pointe Coupee, St. Landry, St. Martin, St. Tammany, Tangipahoa, Washington
Elliptio crassidens [22]	Elephant-ear	S2S3	G5				East Feliciana, St. Helena, St. Tammany, Tangipahoa
Fallicambarus oryktes [23]	Flatwoods Digger	S2S3	G4			Fallicambarus oryktes [24]	St. Tammany
Farancia erytrogramma [25]	Rainbow Snake	S2	G4			Farancia erytrogramma [26]	East Baton Rouge, East Feliciana, St. Tammany, Tangipahoa
Fusconaia ebena [27]	Ebonyshell	S3	G4G5				Madison, Morehouse, Richland, St. Tammany
Gopherus polyphemus [28]	Gopher Tortoise	S1	G3	T	T	Gopherus polyphemus [29]	St. Tammany, Tangipahoa

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Graptemys gibbonsi [30]	Pascagoula Map Turtle	S3	G3G4				St. Tammany, Tangipahoa
Graptemys oculifera [31]	Ringed Map Turtle	S2	G2	T	T	Graptemys oculifera [32]	St. Tammany
Haliaeetus leucocephalus [33]	Bald Eagle	S2N,S3B	G5	E	Delisted	Haliaeetus leucocephalus [34]	Ascension, Assumption, Avoyelles, Beauregard, Bossier, Caddo, Calcasieu, Claiborne, Concordia, DeSoto, East Baton Rouge, East Feliciana, Franklin, Iberia, Iberville, Jackson, Jefferson, Lafourche, LaSalle, Livingston, Morehouse, Natchitoches, Orleans, Ouachita, Plaquemines, Pointe Coupee, Rapides, Richland, Sabine, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Landry, St. Martin, St. Mary, St. Tammany, Tangipahoa, Tensas, Terrebonne, Union, Vermilion, West Baton

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
							Rouge, West Feliciana
Hemidactylium scutatum [35]	Four-toed Salamander	S1	G5			Hemidactylium scutatum [36]	Ascension, East Baton Rouge, East Feliciana, St. Tammany
Lampropeltis calligaster rhombomaculata [37]	Mole Kingsnake	S1S2	G5T5			Lampropeltis calligaster rhombomaculata [38]	St. Tammany, Tangipahoa
Lampsilis ornata [39]	Southern Pocketbook	S3	G5				East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa
Macrochelys temminckii [40]	Alligator Snapping Turtle	S3	G3G4	Restricted Harvest		Macrochelys temminckii [41]	Acadia, Allen, Avoyelles, Beauregard, Bienville, Catahoula, Concordia, Grant, Iberia, Lafayette, Madison, Ouachita, Rapides, St. John the Baptist, St. Landry, St. Tammany, Tangipahoa, Tensas, Vermilion
Malaclemys terrapin [42]	Diamondback Terrapin	S2	G4	Restricted Harvest		Malaclemys terrapin [43]	Cameron, Jefferson, Jefferson Davis, Lafourche, Orleans, St. Bernard, St. Tammany, Terrebonne, Vermilion

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Micrurus fulvius [44]	Harlequin Coral Snake	S2	G5			Micrurus fulvius [45]	St. Helena, St. Tammany, Tangipahoa
Moxostoma carinatum [46]	River Redhorse	S1S3	G4				St. Tammany
Mustela frenata [47]	Long-tailed Weasel	S2S4	G5			Mustela frenata [48]	Allen, East Baton Rouge, East Feliciana, Jackson, Lincoln, Livingston, Ouachita, Rapides, St. James, St. Tammany, Union, Vernon, West Feliciana
Noturus munitus [49]	Frecklebelly Madtom	S2S3	G3				St. Tammany
Obovaria jacksoniana [50]	Southern Hickorynut	S1S2	G2			Obovaria jacksoniana [51]	Allen, Beauregard, East Baton Rouge, East Feliciana, Livingston, Natchitoches, Rapides, Sabine, St. Helena, St. Tammany, Vernon
Obovaria unicolor [52]	Alabama Hickorynut	S1	G3			Obovaria unicolor [53]	East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa
Ophisaurus ventralis [54]	Eastern Glass Lizard	S3	G5			Ophisaurus ventralis [55]	East Baton Rouge, East Feliciana, Jefferson, Lafourche, Livingston, Plaquemines, St. Helena, St. Tammany,

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
							Tangipahoa, Terrebonne
Pandion haliaetus [56]	Osprey	S2B,S3N	G5			Pandion haliaetus [57]	Grant, Iberville, Lafourche, Natchitoches, Plaquemines, Rapides, St. John the Baptist, St. Martin, St. Tammany, Winn
Percina aurora [58]	Pearl Darter	SH	G1		C		St. Tammany
Percina lenticula [59]	Freckled Darter	S1	G2			Percina lenticula [60]	St. Tammany
Picoides borealis [61]	Red-cockaded Woodpecker	S2	G3	E	E	Picoides borealis [62]	Allen, Beauregard, Bienville, Bossier, Caddo, Caldwell, Catahoula, DeSoto, Evangeline, Grant, Jackson, LaSalle, Livingston, Morehouse, Natchitoches, Ouachita, Rapides, Sabine, St. Tammany, Tangipahoa, Union, Vernon, Webster, Winn
Polyodon spathula [63]	Paddlefish	S3	G4			Polyodon spathula [64]	Acadia, Avoyelles, Cameron, Catahoula, Concordia, Evangeline, Franklin,

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
							Iberia, Jefferson Davis, LaSalle, Orleans, Ouachita, Rapides, Sabine, St. Bernard, St. Charles, St. John the Baptist, St. Martin, St. Mary, St. Tammany, Tangipahoa, Tensas, Union
Potamilus inflatus [65]	Inflated Heelsplitter	S1	G1G2Q	T	T	Potamilus inflatus [66]	Ascension, East Baton Rouge, East Feliciana, Livingston, St. Tammany
Procambarus bivittatus [67]	Ribbon Crawfish	S1S2	G5				St. Tammany
Procambarus shermani [68]	Plain Brown Crawfish	S2	G4				St. Tammany
Pseudacris ornata [69]	Ornate Chorus Frog	S1	G5			Pseudacris ornata [70]	Orleans, St. Tammany
Pseudotriton montanus [71]	Gulf Coast Mud Salamander	S1	G5	Prohibited		Pseudotriton montanus [72]	St. Tammany
Pteronotropis signipinnis [73]	Flagfin Shiner	S3	G5				St. Tammany, Washington
Pteronotropis welaka [74]	Bluenose Shiner	S1S2	G3G4				St. Tammany
Rana sevosa [75]	Dusky Gopher Frog	SH	G1		E	Rana sevosa [76]	St. Tammany
Reithrodontomys humulis [77]	Eastern Harvest Mouse	S3S4	G5				Acadia, Beauregard, East Baton Rouge, East Feliciana, Jefferson Davis,

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
							Lafayette, St. Landry, St. Martin, St. Tammany, Vermilion, Vernon
Rhadinaea flavilata [78]	Pine Woods Snake	S1	G4			Rhadinaea flavilata [79]	Livingston, St. Tammany
Trichechus manatus [80]	Manatee	SNA	G2	E	E	Trichechus manatus [81]	Ascension, Cameron, East Baton Rouge, East Feliciana, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Tammany, Tangipahoa, Terrebonne
Ursus americanus luteolus [82]	Louisiana Black Bear	S2	G5T2	T	T	Ursus americanus luteolus [83]	Franklin, Iberia, Madison, Pointe Coupee, Richland, St. Mary, St. Tammany, Tensas
Villosa vibex [84]	Southern Rainbow	S2	G5Q				East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa

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[14] http://www.wlf.louisiana.gov/sites/default/files/pdf/fact_sheet_animal/32191-Alosa alabamae/alosa_alabamae.pdf
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[16] http://www.wlf.louisiana.gov/sites/default/files/pdf/fact_sheet_animal/32216-Ambystoma tigrinum/ambystoma_tigrinum.pdf
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[19] http://www.wlf.louisiana.gov/sites/default/files/pdf/fact_sheet_animal/32204-Cycleptus meridionalis/cycleptus_meridionalis.pdf
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[21] http://www.wlf.louisiana.gov/sites/default/files/pdf/fact_sheet_animal/32258-Elanoides forficatus/elanoides_forficatus.pdf
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Species by Parish List

 [1] Printable Version [2]

Explanation of Ranking Categories Employed by Natural Heritage Programs Nationwide

Federal Ranks (USESA FIELD):

Global Element Ranks:

State Element Ranks:

State Protection Status:

Filter By Parish St. Tammany **Filter by Type** Rare Plant Species Apply

Rare Plant Species

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Agalinis aphylla [9]	Coastal Plain False-foxglove	S1	G3G4			Agalinis aphylla [10]	St. Tammany
Agalinis filicaulis [11]	Purple False-foxglove	S2	G3G4			Agalinis filicaulis [12]	Allen, Beauregard, Calcasieu, St. Tammany, Vernon
Agalinis linifolia [13]	Flax-leaf False-foxglove	S2	G4?			Agalinis linifolia [14]	St. Helena, St. Tammany
Asclepias michauxii [15]	Michaux Milkweed	S2	G4G5				St. Tammany, Tangipahoa
Burmannia biflora [16]	Northern Burmannia	S3	G4G5				Bienville, Caddo, Catahoula, DeSoto, Grant, LaSalle, Ouachita, Rapides, St. Tammany, Vernon, Webster, Winn

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Calopogon barbatus [17]	Bearded Grass-pink	S1	G4?			Calopogon barbatus [18]	Natchitoches, St. Tammany, Vernon
Calopogon multiflorus [19]	Many-flowered Grass-pink	S1	G2G3			Calopogon multiflorus [20]	St. Tammany
Calopogon pallidus [21]	Pale Grass-pink	S2	G4G5				St. Tammany, Tangipahoa
Carex decomposita [22]	Cypress-knee Sedge	S3	G3			Carex decomposita [23]	Bienville, Bossier, Caddo, Evangeline, Franklin, Grant, Iberia, Jackson, Lafayette, Lafourche, Ouachita, St. Martin, St. Mary, St. Tammany, Tensas
Carex venusta [24]	Caric Sedge	S1	G4				St. Tammany, Vernon, Washington
Chamaelirium luteum [25]	Fairy Wand	S2S3	G5			Chamaelirium luteum [26]	Lincoln, Natchitoches, Ouachita, St. Helena, St. Tammany, Tangipahoa, Washington, West Feliciana
Chasmanthium ornithorhynchum [27]	Bird-bill Spikegrass	S2	G4			Chasmanthium ornithorhynchum [28]	St. Tammany, Tangipahoa
Chrysopsis gossypina ssp. hyssopifolia [29]	A Golden Aster	S1	G5T3T5				St. Tammany, Washington
Cirsium lecontei [30]	Lecont's Thistle	S2	G2G3			Cirsium lecontei [31]	St. Tammany, Tangipahoa
Cliftonia monophylla [32]	Buckwheat-tree	S1	G4G5				St. Tammany

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Collinsonia canadensis [33]	Richweed	S2?	G5			Collinsonia canadensis [34]	St. Helena, St. Tammany, Washington
Collinsonia serotina [35]	Southern horse-balm	S1	G3G4			Collinsonia serotina [36]	St. Tammany, Washington
Coreopsis nudata [37]	Georgia Tickseed	S2	G3?			Coreopsis nudata [38]	St. Tammany
Deparia acrostichoides [39]	Silvery Glade Fern	S2	G5				St. Tammany, West Feliciana
Dichanthelium strigosum var. glabrescens [40]	Roughhair Witchgrass	S1	G5T4T5				Beauregard, Grant, LaSalle, Rapides, St. Tammany, Washington
Drosera intermedia [41]	Spoon-leaved Sundew	S2	G5				St. Tammany, Washington
Dulichium arundinaceum [42]	Three-way Sedge	S2	G5				Bienville, Caddo, Rapides, St. Tammany, Washington
Eleocharis elongata [43]	Slim Spike-rush	S3	G5?			Eleocharis elongata [44]	Cameron, St. Tammany, Vermilion
Eleocharis fallax [45]	Creeping Spike-rush	S1?	G4G5				Plaquemines, St. Bernard, St. Tammany, Terrebonne
Fuirena scirpoidea [46]	Southern Umbrella-sedge	S1	G5			Fuirena scirpoidea [47]	Orleans, St. Tammany
Fuirena simplex var. aristulata [48]	Western Umbrella Sedge	S1	G5T4				East Carroll, Natchitoches, Rapides, St. Charles, St. Landry, St. Tammany
Gratiola ramosa [49]	Hedgehyssop	S1S2	G4G5				Beauregard, St. Tammany
Helenium brevifolium [50]	Shortleaf Sneezeweed	S1	G3G4			Helenium brevifolium [51]	St. Tammany, Tangipahoa

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Ilex amelanchier [52]	Sarvis Holly	S2	G4			Ilex amelanchier [53]	St. Tammany, Tangipahoa, Vernon
Ilex myrtifolia [54]	Myrtle Holly	S2	G5?			Ilex myrtifolia [55]	St. Tammany, Tangipahoa
Isoetes louisianensis [56]	Louisiana Quillwort	S2	G2		E	Isoetes louisianensis [57]	St. Tammany
Lachnocaulon digynum [58]	Pineland Bog Button	S3	G3				Beauregard, Natchitoches, Sabine, St. Tammany, Vernon
Lechea pulchella [59]	A Pinweed	S1S2	G5				St. Tammany, Tangipahoa
Liatris tenuis [60]	Slender Gay-feather	S1	G3			Liatris tenuis [61]	Natchitoches, St. Tammany
Lilium catesbaei [62]	Southern Red Lily	S1	G4				St. Tammany, Tangipahoa
Lilium superbum [63]	Turk's Cap Lily	S1	G5				St. Tammany
Linum macrocarpum [64]	Gig Fruit Flax	S1	G2			Linum macrocarpum [65]	St. Tammany
Lophiola aurea [66]	Golden Crest	S2S3	G4			Lophiola aurea [67]	St. Tammany
Ludwigia alata [68]	Winged Primrose Willow	S1	G3G5			Ludwigia alata [69]	St. Tammany
Lupinus villosus [70]	Lady Lupine	S2	G5				St. Tammany
Lycopodiella cernua var. cernua [71]	Staghorn Clubmoss	S2	G5T5				Natchitoches, Ouachita, St. Tammany
Macranthera flammea [72]	Flame Flower	S2	G3			Macranthera flammea [73]	St. Tammany
Mayaca fluviatilis [74]	Bog Moss	S2	G5				Evangeline, Rapides, St. Tammany
Myrica inodora [75]	Odorless Bayberry	S2	G4				St. Tammany
Panicum rigidulum var.	Redtop Panicum	S1	G5T5?				Natchitoches, St. Tammany

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
combsii [76]							
Paronychia erecta var. corymbosa [77]	Squareflower	S1	G3G4T2T4			Paronychia erecta var. corymbosa [78]	St. Tammany
Physalis carpenteri [79]	Carpenter's Ground-cherry	S1	G3			Physalis carpenteri [80]	St. Helena, St. Tammany, Tangipahoa, West Feliciana
Physostegia correllii [81]	Correll's False Dragon-head	S1	G2			Physostegia correllii [82]	Cameron, St. Charles, St. James, St. Tammany
Pinguicula lutea [83]	Yellow Butterwort	S2	G4G5				St. Tammany
Platanthera blephariglottis var. conspicua [84]	White-fringe Orchis	S1	G4G5T3T4				St. Tammany, Vernon
Platanthera integra [85]	Yellow Fringeless Orchid	S3	G3G4				Beauregard, Natchitoches, St. Tammany, Vernon
Podostemum ceratophyllum [86]	Riverweed	S1	G5				East Feliciana, St. Helena, St. Tammany, Tangipahoa
Polygala chapmanii [87]	Chapman's milkwort	S1	G3G5				St. Tammany
Polygala crenata [88]	Scalloped Milkwort	S2	G4?			Polygala crenata [89]	Allen, Beauregard, St. Tammany, Tangipahoa
Polygala hookeri [90]	Hooker Milkwort	S1	G3			Polygala hookeri [91]	St. Tammany
Potamogeton perfoliatus [92]	Clasping-leaf Pondweed	SH	G5			Potamogeton perfoliatus [93]	Orleans, St. Tammany
Pteroglossaspis ecristata [94]	A Wild Coco	S2	G2G3			Pteroglossaspis ecristata [95]	Allen, Beauregard, Grant, Jefferson Davis, St. Tammany,

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
							Tangipahoa, Vernon
Quercus arkansana [96]	Arkansas Oak	S2	G3			Quercus arkansana [97]	St. Tammany, Union, Webster
Quercus rubra [98]	Red Oak	S1S3	G5				Caldwell, DeSoto, Morehouse, Rapides, St. Tammany, Union, West Carroll
Rhynchospora chapmanii [99]	Chapman Beakrush	S3	G4				St. Tammany
Rhynchospora ciliaris [100]	Ciliate Beakrush	S3	G4			Rhynchospora ciliaris [101]	St. Tammany
Rhynchospora compressa [102]	Flat-fruit Beakrush	S3	G4			Rhynchospora compressa [103]	Beauregard, St. Tammany, Tangipahoa
Rhynchospora debilis [104]	Savannah Beakrush	S3	G4?				Allen, St. Tammany
Rhynchospora decurrens [105]	Swamp-forest Beakrush	SH	G3G4				St. Tammany
Rhynchospora divergens [106]	Spreading Beakrush	S1	G4				St. Tammany
Rhynchospora miliacea [107]	Millet Beakrush	S2	G5			Rhynchospora miliacea [108]	Allen, Lafourche, Livingston, Rapides, St. Mary, St. Tammany, Terrebonne, Vernon, Winn
Ruellia noctiflora [109]	Night-flowering Wild-petunia	S1	G2			Ruellia noctiflora [110]	St. Tammany
Sabatia arenicola [111]	Sand Rose-gentian	S1	G3G5			Sabatia arenicola [112]	Cameron, Jefferson, Lafourche, Orleans, Plaquemines, St. Bernard, St. Tammany, Terrebonne

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
Saccharum brevibarbe var. brevibarbe [113]	Short-beard Plumegrass	S1	G3G5				St. Tammany
Salix caroliniana [114]	Coastal Plain Willow	S1	G5			Salix caroliniana [115]	St. Tammany
Sanicula marilandica [116]	Maryland's Black Snake-root	SH	G5				St. Tammany
Sarracenia psittacina [117]	Parrot Pitcherplant	S3	G4			Sarracenia psittacina [118]	St. Tammany, Tangipahoa
Schoenoplectus etuberculatus [119]	Bulrush	S1	G3G4			Schoenoplectus etuberculatus [120]	Rapides, Sabine, St. Tammany, Washington
Scleria verticillata [121]	Low Nutrush	S1	G5				Allen, Jefferson Davis, St. Tammany
Sclerolepis uniflora [122]	Pink Bob Button	S1	G4				St. Tammany
Selaginella ludoviciana [123]	Louisiana Spikemoss	S1	G3G4			Selaginella ludoviciana [124]	St. Tammany
Serenoa repens [125]	Saw Palmetto	S1	G4G5			Serenoa repens [126]	Orleans, St. Tammany
Sericocarpus linifolius [127]	Narrowleaf Aster	S2	G5				St. Tammany, Tangipahoa
Sida elliottii [128]	Elliott Sida	SH	G4G5			Sida elliottii [129]	Cameron, East Baton Rouge, East Feliciana, St. Tammany
Sium suave [130]	Hemlock Water-parsnip	S1S2	G5			Sium suave [131]	St. Tammany, Tangipahoa
Smilax auriculata [132]	Eared Greenbrier	S2	G4?			Smilax auriculata [133]	St. Bernard, St. Tammany
Stewartia malacodendron [134]	Silky Camellia	S2S3	G4				Caldwell, Catahoula, East Baton Rouge, East Feliciana, Grant, Livingston, St. Helena,

Scientific Name [3]	Common Name [4]	State Rank [5]	Global Rank [6]	State Status [7]	Federal Status [8]	Fact Sheet	Parishes
							St. Tammany, Tangipahoa
Stipulicida setacea [135]	Pineland Scaly-pink	S1	G4G5			Stipulicida setacea [136]	St. Tammany, Washington
Tephrosia hispidula [137]	Hoary Pea	S2?	G4G5			Tephrosia hispidula [138]	St. Tammany
Tofieldia racemosa [139]	Coastal False-asphodel	S2S3	G5			Tofieldia racemosa [140]	St. Tammany
Trichomanes petersii [141]	Dwarf Filmy-fern	S2	G4G5				East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa
Tridens carolinianus [142]	Carolina Fluff Grass	S2	G3				St. Helena, St. Tammany, Tangipahoa
Uniola paniculata [143]	Sea Oats	S2	G5			Uniola paniculata [144]	Cameron, Jefferson, Lafourche, Plaquemines, St. Bernard, St. Tammany, Terrebonne
Xyris scabrifolia [145]	Harper's Yellow-eyed Grass	S2	G3			Xyris scabrifolia [146]	Beauregard, Natchitoches, St. Tammany, Vernon, Winn
Xyris serotina [147]	Yellow-eyed Grass	S1	G3G4				St. Tammany
Xyris stricta [148]	Pineland Yellow-eyed Grass	S2	G3G4			Xyris stricta [149]	Allen, Beauregard, St. Tammany
Zigadenus leimanthoides [150]	Death Camus	S1	G4Q				St. Tammany, Vernon

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Appendix D

Agency Coordination

United States Department of the Interior

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

April 8, 2014

Ms. Elizabeth Beam
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, Louisiana 70816

Dear Ms. Beam:

Please reference your March 25, 2014, letter regarding the Regional Planning Commission (RPC) and the Louisiana Department of Transportation and Development's (LADOTD) proposed LA Highway 434 (LA 434) widening project from LA 36 to its junction with the proposed LA 3241 in St. Tammany Parish, Louisiana. The U.S. Fish and Wildlife Service has reviewed the information provided, and offers the following comments in accordance with provisions of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Red-Cockaded Woodpecker

The proposed project would be located in a parish known to be inhabited by the endangered red-cockaded woodpecker (RCW, *Picoides borealis*). RCWs roost and forage year-round and nest seasonally (i.e., April through July) in open, park-like stands of mature pine trees containing little hardwood component, a sparse midstory, and a well-developed herbaceous understory. RCWs can tolerate small numbers of overstory and midstory hardwoods at low densities found naturally in many southern pine forests, but they are not tolerant of dense midstories resulting from fire suppression or from overstocking of pine. Trees selected for cavity excavation are generally at least 60 years old, although the average stand age can be younger. The collection of one or more cavity trees plus a surrounding 200 foot wide buffer of continuous forest is known as a RCW cluster. RCW foraging habitat is located within one-half mile of the cluster and is comprised of pine and pine-hardwood stands (i.e., 50 percent or more of the dominant trees are pines) that are at least 30 years of age and have a moderately low average basal area (i.e., 40 – 80 square feet per acre is preferred).

If the proposed project area does not contain suitable nesting and/or foraging habitat as defined above, further consultation with the Service will not be necessary. However, if potential RCW nesting or foraging habitat is located within the project area, all suitable nesting habitat within the project area and within a one-half mile radius from such habitat should be carefully surveyed by a qualified biologist for the presence of RCW cavity trees in accordance with the survey protocol found in Appendix 4 of the RCW Recovery Plan (2003), which can be found online at http://www.fws.gov/rcwrecovery/recovery_plan.html. We request 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 or 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 implementation of the proposed project has the potential to directly or indirectly affect RCW individuals or their habitat, further consultation with this office will be necessary.

Dusky Gopher Frog

Historically, the dusky gopher frog (=Mississippi gopher frog) (*Rana sevosa*) was found in Louisiana, Mississippi, and Alabama, west of the Mobile River drainage. It has not been seen in Louisiana since 1965 and is presently known to survive at only one site in Mississippi. The dusky gopher frog is a darkly-colored, moderately-sized frog with warts covering its back and dusky spots on its belly. The Dusky (Mississippi) gopher frog was listed as endangered under the Endangered Species Act on December 4, 2001, as a distinct population segment (DPS) of the gopher frog.

The Dusk gopher frog's habitat includes both upland, sandy areas covered with longleaf pine; and isolated, temporary, wetland breeding sites within the forested landscape. Adult frogs spend most of their lives underground in forests with an open canopy and abundant ground cover. They use active and abandoned gopher tortoise burrows, abandoned mammal burros and holes in and under stumps as their underground retreats. Breeding sites are isolated ponds that dry out completely at certain times of the year. Substantial winter rains are needed to ensure that ponds are filled sufficiently to allow development of juvenile frogs.

On June 12, 2012, the Service announced the final rule in the Federal register (Volume 77, No. 113) designating Dusky gopher frog critical habitat on 1,544 acres in St. Tammany Parish, Louisiana (Unit 1) and 1,996 acres in four Mississippi counties (Units 2-12). Although the LA 3241 realignment project is not part of this project, LADOTD and RPC should be cognizant that a portion of that realignment project may traverse through or adjacent to that Unit 1 Dusky gopher frog critical habitat. That area of concern is where the LA 3241 realignment terminates with LA 36. The primary constituent elements (PCE) essential for the conservation of the Dusky gopher frog are:

PCE 1—Ephemeral wetland habitat. Breeding ponds, geographically isolated from other waterbodies and embedded in forests historically dominated by longleaf pine communities, that are small (generally <0.4 to 4.0 ha (<1 to 10 ac)), ephemeral, and acidic. Specific conditions necessary in breeding ponds to allow for successful reproduction of dusky gopher frogs are:

(a) An open canopy with emergent herbaceous vegetation for egg attachment;
(b) An absence of large, predatory fish that prey on frog larvae;
(c) Water quality such that frogs, their eggs, or larvae are not exposed to pesticides or chemicals and sediment associated with road runoff; and
(d) Surface water that lasts for a minimum of 195 days during the breeding season to allow a sufficient period for larvae to hatch, mature, and metamorphose.

PCE 2 —Upland forested nonbreeding habitat. Forests historically dominated by longleaf pine, adjacent to and accessible to and from breeding ponds, that are maintained by fires frequent enough to support an open canopy and abundant herbaceous ground cover and gopher tortoise burrows, small mammal burrows, stump holes, or other underground habitat that the dusky gopher frog depends upon for food, shelter, and protection from the elements and predation.

PCE 3 —Upland connectivity habitat. Accessible upland habitat between breeding and nonbreeding habitats to allow for dusky gopher frog movements between and among such sites. This habitat is characterized by an open canopy, abundant native herbaceous species, and a subsurface structure that provides shelter for dusky gopher frogs during seasonal movements, such as that created by deep litter cover, clumps of grass, or burrows.

Although the Louisiana Unit (Unit 1) is currently unoccupied, the last observation of this frog occurred in 1965 in one of the ponds within this unit. The uplands associated with this unit currently do not contain the essential physical or biological features of critical habitat (PCE 2 and PCE 3), however, the Service believes them to be restorable with reasonable effort. Thus, the Service determined Unit 1 to be essential for the conservation and recovery of the Dusky gopher frog because it provides important breeding sites for recovery. Should a proposed action involve federal implementation, funding, or a federal permit and directly or indirectly affect designated critical habitat, further consultation with this office will be necessary.

Wetland Impacts

The proposed project may also impact wetlands. For a complete jurisdictional wetland delineation of the proposed project, please contact Mr. Robert Heffner (504/862-2274) at the New Orleans District, U.S. Army Corps of Engineers (Corps). If the Corps determines that the proposed project is within their regulatory jurisdiction, official U.S. Fish and Wildlife Service comments will be provided in response to the corresponding Public Notice.

We appreciate the opportunity to provide comments in the planning stages of this proposed project. If you need further assistance, please contact Joshua Marceaux (337/291-3110) of this office.

Sincerely,

Brad S. Rieck
Deputy Supervisor
Louisiana Ecological Services Office

cc: Corps of Engineers, New Orleans, LA
LADOTD, Louisiana Department of Transportation and Development, Baton Rouge, LA
LDWF, Natural Heritage Program, Baton Rouge, LA

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.

Louisiana Ecological Services Office

ESA Technical Assistance Form

General Information

Name: NORPC and LDOTD

Point of Contact: Gregory Badon (ARCADIS Inc.)

Address: 10352 Plaza Americana Drive

City: Baton Rouge **State:** Louisiana **Zip Code:** 70816

Phone Number 1: 225-292-1004 **Phone Number 2:** _____

Email Address: greg.badon@arcadis-us.com

Proposed Project Information

Project Reference ID: 2358

Project Latitude: 30.399 **Project Longitude:** -89.896

Project Parish(es): Saint Tammany

Project Description: Stage 1 Environmental Assessment /

Line and Grade Study

LA 434 Corridor

St. Tammany Parish, Louisiana

RPC Task LA434EA (H.004981)

The New Orleans Regional Planning Commission, in cooperation with the Louisiana Department of Transportation and Development (LADOTD) proposes widening a segment of Louisiana Highway 434 (LA 434) from two lanes to four lanes from Louisiana Highway 36 (LA 36) to its junction with the proposed Louisiana Highway 3241 (LA 3241) and replacement of the bridge over Bayou Lacombe in St. Tammany Parish, a distance of approximately 4.5 miles. The project consists of providing all necessary services required to prepare an Environmental Assessment (EA) in accordance with the National Environmental Policy Act, as amended, and the Federal Highway Administration's regulations and guideline and completion of a Line and Grade Study.

The information provided indicates that: (1) your project occurs in a parish where one or more federally listed species and/or their critical habitat may occur; and (2) may involve disturbance or clearing of previously undisturbed areas or may involve new construction activities that may negatively impact surrounding potential habitat.

Based on these factors, this project requires further review. You may submit your project information and a request for review via fax or mail to the Louisiana Ecological Services Office at the one of the addresses below

Louisiana Ecological Services Office

ESA Technical Assistance Form

in order to complete coordination under Section 7(a)(2) of the Endangered Species Act of 1973 (Act).

Please include the following project information in your submission:

- Full Project description of work to be completed
- Project Contact name and number
- Project Location in latitude and longitude, including staging areas
- Approximate date for project to begin and end
- Any other information that may be helpful for our review process

Please keep a copy of this pre-development coordination for your records. Additionally, if you would like a copy of this activity kept on file by the Service, please submit a copy to the Louisiana Ecological Services office.

Mailing Address: 646 Cajundome Blvd., Suite 400, Lafayette, LA 70506 Attn: Biological Science Technician
Email: Lafayette@fws.gov
Fax: 337/291-3139

If you have additional questions, please contact Louisiana ES Office Biological Science Technician at 337/291-3100 for further assistance.

Louisiana Ecological Services Office

ESA Technical Assistance Form

Project Type: Other

Does the project propose to obtain, remodel, refurbish, or rehabilitate existing structures in such a way that does not significantly alter the present capacity or use, and does not alter surrounding land areas that were previously undisturbed? **No**

Does the project propose to reconstruct, resurface, or enhance infrastructure and/or cityscape (e.g. streets, sewers, sidewalks, etc.) within the current footprint of the infrastructure and in a manner that does not disturb previously undisturbed ground? **No**

Is the construction project located entirely within the footprint of an established urban/suburban area (incorporated villages, towns, or cities)? **No**

Does the project propose to do general construction or clearing in an area that has been previously undisturbed? **Yes**

ARCADIS

Appendix E

Photographic Log

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
1	03-18-2014

Site: Site 1
Description:
View of Site 1, facing north.

Photo No.	Date:
2	03-18-2014

Site: Site 1
Description:
View of Site 1, facing east.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
3	03-18-2014

Site: Site 1
Description:
View of Site 1, facing south.

Photo No.	Date:
4	03-18-2014

Site: Site 1
Description:
View of Site 1, facing west.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
5	03-18-2014

Site: Site 1
Description:
Soil sample collected at Site 1.

Photo No.	Date:
6	03-18-2014

Site: Site 2
Description:
Inundated area near Site 2, facing west.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
7	03-18-2014

Site: Site 2
Description:
Inundated area near Site 2, facing north.

Photo No.	Date:
8	03-18-2014

Site: Site 2
Description:
Sedge (*Carex spp*.) species observed near Site 2.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
9	03-18-2014

Site: Site 2
Description:
Soil sample collected at Site 2.

Photo No.	Date:
10	03-18-2014

Site: Site 3
Description:
View of Site 3, facing north.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
11	03-18-2014

Site: Site 3
Description:
View of Site 3, facing east.

Photo No.	Date:
12	03-18-2014

Site: Site 3
Description:
View of Site 3, facing south.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
13	03-18-2014

Site: Site 3
Description:
View of Site 3, facing west.

Photo No.	Date:
14	03-18-2014

Site: Site 3
Description:
Soil sample collected at Site 3.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
15	03-18-2014

Site: Site 4
Description:
View of Site 4, facing north.

Photo No.	Date:
16	03-18-2014

Site: Site 4
Description:
View of Site 4, facing east.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
17	03-18-2014

Site: Site 4
Description:
View of Site 4, facing south.

Photo No.	Date:
18	03-18-2014

Site: Site 4
Description:
View of Site 4, facing west.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
19	03-18-2014

Site: Site 4
Description:
Soil sample collected at Site 4.

Photo No.	Date:
20	03-19-2014

Site: Site 5
Description:
View of Site 5, facing north.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
21	03-19-2014

Site: Site 5
Description:
View of Site 5, facing east.

Photo No.	Date:
22	03-19-2014

Site: Site 5
Description:
View of Site 5, facing south.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
23	03-19-2014

Site: Site 5
Description:
View of Site 5, facing west.

Photo No.	Date:
24	03-19-2014

Site: Site 5
Description:
Soil sample collected at Site 5.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
25	03-19-2014

Site: Site 6
Description:
View of Site 6, facing north.

Photo No.	Date:
26	03-19-2014

Site: Site 6
Description:
View of Site 6, facing east.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
27	03-19-2014

Site: Site 6
Description:
View of Site 6, facing south.

Photo No.	Date:
28	03-19-2014

Site: Site 6
Description:
View of Site 6, facing west.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
29	03-19-2014

Site: Site 6
Description:
Soil sample collected at Site 6.

Photo No.	Date:
30	03-19-2014

Site: Site 7
Description:
View of Site 7, facing north.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
31	03-19-2014

Site: Site 7
Description:
View of Site 7, facing east.

Photo No.	Date:
32	03-19-2014

Site: Site 7
Description:
View of Site 7, facing south.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
33	03-19-2014

Site: Site 7
Description:
View of Site 7, facing west.

Photo No.	Date:
34	03-19-2014

Site: Site 7
Description:
Soil sample collected at Site 7.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
35	03-19-2014

Site: Site 8
Description:
View of Site 8, facing north.

Photo No.	Date:
36	03-19-2014

Site: Site 8
Description:
View of Site 8, facing east.

Photo No.	Date:
37	03-19-2014

Site: Site 8
Description:
View of Site 8, facing south.

Photo No.	Date:
38	03-19-2014

Site: Site 8
Description:
View of Site 8, facing west.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
39	03-19-2014

Site: Site 8
Description:
Soil sample collected at Site 8.

Photo No.	Date:
40	03-19-2014

Site: Site 9
Description:
View of Site 9, facing north.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
41	03-19-2014

Site: Site 9
Description:
View of Site 9, facing east.

Photo No.	Date:
42	03-19-2014

Site: Site 9
Description:
View of Site 9, facing south.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
43	03-19-2014

Site: Site 9
Description:
View of Site 9, facing west.

Photo No.	Date:
44	03-19-2014

Site: Site 9
Description:
Soil sample collected at Site 9.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
45	03-19-2014

Site: Site 10
Description:
View of Site 10, facing north.

Photo No.	Date:
46	03-19-2014

Site: Site 10
Description:
View of Site 10, facing east.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
47	03-19-2014

Site: Site 10
Description:
View of Site 10, facing south.

Photo No.	Date:
48	03-19-2014

Site: Site 10
Description:
View of Site 10, facing west.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
49	03-19-2014

Site: Site 10
Description:
Soil sample collected at Site 10.

Photo No.	Date:
50	03-19-2014

Site: Site 11
Description:
View of Site 11, facing north.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
51	03-19-2014

Site: Site 11
Description:
View of Site 11, facing east.

Photo No.	Date:
52	03-19-2014

Site: Site 11
Description:
View of Site 11, facing south.

ARCADIS

PHOTOGRAPHIC LOG

Client Name: New Orleans Regional Planning Commission	Stage 1 Environmental Assessment/ Line and Grade Study, LA 434 Corridor Site Location: St. Tammany Parish, Louisiana	Project No./Task No.: LA003230.0001.00004 H.004981

Photo No.	Date:
53	03-19-2014

Site: Site 11
Description:
View of Site 11, facing west.

Photo No.	Date:
54	03-19-2014

Site: Site 11
Description:
Soil sample collected at Site 11.