

PROSPECTUS

**ST. GABRIEL BIRDING CENTER
MITIGATION BANK
IBERVILLE AND ASCENSION PARISHES,
LOUISIANA**

Prepared for

**U.S. Army Corps of Engineers
New Orleans District
New Orleans, Louisiana**

Submitted by

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GEC Project No. 0027.7035101

Prepared for

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New Orleans District**
New Orleans, Louisiana

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PROSPECTUS

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ST. GABRIEL LAND COMPANY, LLC

St. Gabriel Birding Center Mitigation Bank Iberville and Ascension Parishes, Louisiana

St. Gabriel Land Company, LLC (Sponsor), submits this prospectus to the U.S. Army Corps of Engineers-New Orleans District (CEMVN) and the Interagency Review Team (IRT) to initiate evaluation of the proposed St. Gabriel Birding Center Mitigation Bank (SGBCMB) in accordance with 33 CFR 332.8(d)(2). The details pertaining to the use of this site as a mitigation bank will be specified in the subsequent mitigation banking instrument (MBI). SGBCMB consists of 1,759.9 acres located in Section 13, Township 9S, Range 1E; Sections 31 and 32, Township 8S, Range 2E; and Sections 5,6,7,8, and 18, Township 9S, Range 2E of Iberville and Ascension Parishes, Louisiana (Figures 1 and 2).

The goal of SGBCMB is the cumulative re-establishment, rehabilitation, and enhancement of 1,237.7 acres of bottomland hardwood (BLH) habitat, with an additional 404.5 acres of hydric and non-hydric inclusions. The remaining 134.2 acres of non-mitigation features will comprise access roads, oil and gas well pads, water, and rights-of-way (ROW).

The SGBCMB is located in the Spanish Lake sub-basin. Due to flood control projects implemented during the 1950's, the Spanish Lake basin experienced prolonged inundation until March 2009 when the flood control structure on Alligator Bayou was allowed to remain open. Wetland habitats within the SGBCMB were adversely impacted by this prolonged inundation. Vegetative communities have shifted from those typical of BLH to degraded habitats populated by invasive species and the most flood tolerant native species which were present prior to flood control project implementation. The inundation began instantaneously in the 1950's when the structure was originally closed, as opposed to a change over time which would have encouraged a transition to more flood tolerant communities. Natural regeneration in the communities which remained was impaired due to cessation of mast production in these flood stressed communities. When seeds were produced, their ability to establish was impaired by inundation/flood stress. With the lack of a reliable seed source and the presence of aggressive invasive species, current communities (comprised of canopy trees of excessive age which are poorly developed) will likely transition to an assemblage of invasive and weedy species. Restoration efforts proposed by the Sponsor will provide seedling stock for establishment of both canopy and understory species. Other restoration activities will include invasive species removal/control and hydrologic connectivity improvements.

1.0 OBJECTIVES

1.1 Current Habitat Types and Land Use (Figure 3)

Habitat Type	Land Use	Acreage
Forested Wetlands (degraded due to prolonged inundation)	Recreational / Oil and Gas Leases (208 acres total)	920.6
Forested Wetlands (healthy community with some invasive species present)	Recreational / Oil and Gas Leases (208 acres total)	379.5
Scrub/Shrub Wetlands (degraded due to prolonged inundation)	Recreational / Oil and Gas Leases (208 acres total)	310.1
Forested Uplands	Recreational	9.2
Other U.S. Waters	Natural Drains / Drainage Canals	35.2
Man-made features	Spoil Banks / Roads / ROW / Well Pads	Spoil Banks: 15.8 Roads: 50.4 ROW: 34.6 Well Pads: 4.5 Total: 105.3
Total	---	1759.9

1.2 Proposed Mitigation Bank Habitat Types (Figures 4-4b)

Habitat Type	Acreage	Mitigation Type
BLH lower elevation	7.0	Re-establishment II (Access road to be removed and reforested. Access road removal will benefit surrounding area by removing hydrologic impendence.)
Baldcypress-Tupelo swamp / BLH / BLH Lower elevation / BLH with baldcypress component	310.1	Rehabilitation II (Reforestation of wetlands, invasive species removal, and hydrologic connectivity improvements.)
BLH / BLH Lower elevation / BLH with baldcypress component	920.6	Enhancement II (Supplemental plantings, invasive species removal, and hydrologic connectivity improvements.)
BLH / BLH Lower elevation / BLH with baldcypress component	379.5	Hydric inclusions (Invasive species removal)
Upland hardwoods	25.0	Non-hydric inclusion (Invasive species removal)
Non-wetland	Water: 35.2 Roads: 43.4 ROW: 34.6 Well Pads: 4.5 Totals: 134.2	Non-mitigation
Total	1,759.9	---
Total Mitigation and Inclusions	1,642.2	---

1.3 Aquatic Functions to be Restored

Drainage from the project area currently flows north to Alligator Bayou through numerous natural and manmade drainageways which have been dredged within the Spanish Lake subbasin. Water which once flowed into Spanish Lake via numerous natural waterways now circumvents the lake through man-made/dredged drainageways and flows directly to Alligator Bayou. The dredging of these drainageways throughout the property and the resulting spoil banks improved drainage on the property and

prevented the water within historic drainageways from spreading overbank and temporarily inundating the property as it did historically. Additionally, access roads constructed for oil and gas activities, ROW construction, and timber harvesting impounded portions of the property.

The gapping of interior spoil banks, installation of culverts in access roads currently used for access, installation of low-water crossings in access roads no longer used by large vehicles, complete removal of access roads no longer in use, and timber debris removal will restore natural sheetflow across the property (Figure 5). Water that is currently circumventing the property will be allowed to spread overbank and temporarily inundate the property as it did historically.

Vegetative plantings will be used to restore natural vegetation throughout the property. Long-term maintenance will be provided to prevent colonization by noxious plants, erosion along interfaces of drainageways, and trespass vandalism. Vegetative plantings, as well as the restoration of the hydroperiod across the property, will create improved wildlife habitat, as well as benefiting water quality as described below in Section 1.4.

1.4 Water Quality

The SGBCMB project area is located in the drainage area to subsegment 040201 designated by Louisiana Department of Environmental Quality (LDEQ), which includes Bayou Manchac from its headwaters to the Amite River. Bayou Manchac flows to the northeast and drains to the Amite River approximately 4 miles downstream of the project, which then discharges to Lake Maurepas approximately 10 miles downstream of the project area.

The LDEQ-designated use of Fish and Wildlife Propagation (FWP) for subsegment 040201 is characterized in the most recent LDEQ 303(d) List of Impaired Waterbodies (2008) as impaired due to the following water quality parameters:

- Ammonia levels, nutrient levels (nitrate/nitrite and total phosphorus), and dissolved oxygen levels caused by septic systems and land development;
- Chloride levels, sulfates, and total dissolved solids caused by land development;

The LDEQ-designated use of Primary Contact Recreation (PCR) is characterized in the most recent LDEQ 303(d) list (2008) as impaired due to fecal coliform levels caused by septic systems and sanitary sewer overflows (collection system failures). A draft Total Maximum Daily Load (TMDL) was developed in August 2009 for biochemical oxygen-demanding substances and nutrients; however, this TMDL has not yet been finalized.

The gapping and lowering of spoil banks, installation of culverts, and planting of trees for this project will aid in meeting the future TMDL for biochemical oxygen-demanding

substances and nutrients through the resulting water quality improvements due to increased filtration and plant uptake (i.e., nonpoint source pollution prevention).

2.0 Bank Establishment

2.1 Management Summary

2.1.1 Hydrologic Restoration

Through the efforts of land owners within the Spanish Lake Basin and Parish officials, the Alligator Bayou flood control structure was opened in March 2009 and has remained open since that time. An ongoing study funded by Ponchartrain Levee District (PLD) includes the investigation of the benefits of replacing the existing structure and developing a new gate operating plan. Although the study is not yet completed, all of the proposed plans being investigated specify the normal gate position to be open. With the gate normally open, water levels within the basin will rise and fall with Bayou Manchac. When the stage in Bayou Manchac is high, the gates will be closed to prevent extensive flooding within the basin and re-opened as soon as the stage in Bayou Manchac drops below basin level (i.e. when flood waters can drain from the basin into Bayou Manchac).

With the flood control structure at Alligator Bayou open, flood stage and duration approximates a natural flooding regime, with the exceptions of not allowing flood waters within the basin to crest with Bayou Manchac (by closing of the gate during high stage in the bayou) and the flow restriction associated with the size of control structure. The Sponsor proposes to further enhance hydrology within the project area by gapping spoil banks, constructing low water crossings and culverts through elevated road beds, and restoring natural hydrologic connectivity of natural drains which are impaired by sedimentation and timber/debris (as well as vegetative restoration of wetland areas). These activities will relieve impoundments and allow for improved flood water exchange.

Spoil Banks:

Currently overbank flooding at low stages is impeded by spoil banks and flow within banks is restricted by timber and debris; while, at flood stages sufficient to overtop spoil banks, flood waters become impounded behind spoil banks. Both the gapping of spoil banks and the removing of timber and debris from existing natural and constructed drains will contribute to the ability of flood waters on-site to rise and recede in a more natural regime.

Interior spoil banks will be mechanically degraded at strategic locations to create gaps for water to spread overbank and temporarily inundate the property as it did historically. Additional spoil bank gaps will be created along the Bayou Paul Drainage Canal to allow for overbank flooding into Spanish Lake. Figure 5 presents the location of spoil bank gaps, existing gaps to be rehabilitated and additional gaps to be created.

Spoil bank material excavated during restoration will be placed in adjacent ditches where possible or placed on existing spoil banks.

Elevated Access Roads:

Numerous culverts will be installed within the elevated access roads which are currently in use, to ensure restored sheetflow. Culvert placement will be in conjunction with those areas affected by impoundment or restricted drainage flows and traversed by roads currently in use. Culverts will be inspected and maintained under the long-term maintenance fund, which will include replacement cost on a 10-year cycle.

Low-water crossings will be installed along access roads no longer used by large vehicles, and access roads no longer in use will be completely removed.

Figure 5 presents the location of culverts and low water crossings to be installed.

Abandoned/Degraded Historic Hydrology Connections:

Historically, the bayous and natural drains in the vicinity of the property flowed naturally to Bayou Manchac via Spanish Lake. With the construction of drainage canals around Spanish Lake, as well as the siltation and depositing of timber/debris in bayous and natural drains, flows currently circumvent the lake. The Sponsor proposes to rehabilitate the natural drains on the property via removal of sediments, timber, and debris from these natural drains, thus reconnecting the lake to these natural bayous and drains. Additionally, the Sponsor, in consultation with the IRT and pending permit approval, proposes to plug that portion of the existing man-made drainage canal located along the western side of Spanish Lake to further enhance hydrologic connectivity (see Figure 5).

2.1.2 Vegetative Restoration

2.1.2.1 Rehabilitation / Reestablishment Measures

From the early 1950's until March 2009, the flood control structure located at Alligator Bayou was operated in a manner which unnaturally held the water level in the Spanish Lake Basin at a stage height of approximately 5 feet NGVD88 (per USGS gauge data from the station adjacent to the control structure). This prolonged inundation has adversely impacted the natural communities within the basin. The abrupt and constant nature of this inundation did not allow for a natural shift in the communities, thus those areas affected by this inundation are currently populated by severely stressed excessive age trees which no longer produce mast. This, in conjunction with the presence of aggressive invasive species, will lead to future communities likely comprised of mostly weedy or invasive species if the existing community is not augmented with restoration activities such as supplemental planting and invasive species control.

For those 181.7 acres of reclaimed roadbed (existing roadbeds to be completely removed and re-vegetated) and cleared wetland areas (cleared prior to 1970 and have remained cleared since that time) proposed for designation as rehabilitation and reestablishment, an appropriate combination of hard and soft mast producing bare-root stock will be planted. Three species assemblages will be selected and planted based on elevation (Figure 6). Specific breakdown of each assemblage to be planted will be representative of a species assemblage historically common to bottomland hardwoods and cypress swamps of the area. These species assemblages are identified in *The Natural Communities of Louisiana* (Louisiana Natural Heritage Program, August 2009, available at: <http://www.wlf.louisiana.gov>) a proposed species list is provided below. Proposed planting spacing in areas designated as rehabilitation and reestablishment will be 9'x 9' for an initial density of 538 trees per acre. Planting densities, planting success rates, escrow or bond sum release rates, and monitoring requirements will be consistent with other recently implemented CEMVN approved mitigation banks.

Proposed species composition plantings are as follows:

Bottomland hardwoods (NAVD > 7'):

- Nuttall Oak (*Quercus texana* Buckley) OBL
- Willow Oak (*Quercus phellos* L.) FACW-
- Overcup Oak (*Quercus lyrata* Walter) OBL
- Water Oak (*Quercus nigra* L.) FAC
- Water Hickory (*Carya Aquatica*) OBL
- American Elm (*Ulmus americana* L.) FACW
- Common Persimmon (*Diosoyros virginiana*) FAC
- Sweetgum (*Liquidambar styraciflua* L.) FAC+
- Sugarberry (*Celtis laevigata*) FACW

Bottomland hardwoods lower elevation (NAVD 7'-6'):

- Nuttall Oak (*Quercus texana* Buckley) OBL
- Willow Oak (*Quercus phellos* L.) FACW-
- Overcup Oak (*Quercus lyrata* Walter) OBL
- Water Oak (*Quercus nigra* L.) FAC
- Green Ash (*Fraxinus pennesylvanica*) FACW
- Drummond Red Maple (*Acer rubrum* L. var. *drummondii*) OBL
- Mayhaw (*Crataegus aestivalis*) OBL

Bottomland hardwoods with cypress component (NAVD 6'-5'):

- Nuttall Oak (*Quercus texana* Buckley) OBL
- Overcup Oak (*Quercus lyrata* Walter) OBL
- Water Hickory (*Carya Aquatica*) OBL
- Green Ash (*Fraxinus pennesylvanica*) FACW
- Drummond Red Maple (*Acer rubrum* L. var. *drummondii*) OBL
- Baldcypress (*Taxodium distichum* (L.) Rich.) OBL

Baldcypress-tupelo gum swamp (NAVD < 5'):

- Baldcypress (*Taxodium distichum* (L.) Rich.) OBL
- Tupelo Gum (*Nyssa aquatic*) OBL
- Drummond Red Maple (*Acer rubrum* L. var. *drummondii*) OBL
- Green Ash (*Fraxinus pennesylvanica*) FACW
- Pumpkin Ash (*Fraxinus profunda*) OBL

2.1.2.2 Enhancement Measures

For those 925.4 acres of forested wetlands proposed for designation as enhancement mitigation, restoration will include supplemental plantings (stocking rates will be as needed, based on habitat type and existing canopy but not less than 203 trees per acre) and removal of invasive plant species and replacement with desirable plant species (bare-root stock).

Supplemental plantings within strong-canopied forests would result in low survival rates for planted stock; however, in those areas which are proposed to have supplemental plantings as the primary restoration activity (i.e. enhancement and inclusion areas), primary canopy measurements range from 18 to 80 percent (average of 64 percent). In low areas affected by inundation, tree-ring data taken at plot locations demonstrate a growth rate of approximately 33 to 50 percent of typical growth rates for respective species. The weak canopy and slow growth rates (Table B-1) are evidence of the need for supplemental plantings. A weak canopy (i.e. substantial sunlight penetration) in conjunction with the existing 76% average herbaceous cover (see Table B-1) presents adequate evidence for potential success of effective supplemental plantings.

2.1.2.3 Hydric and Non-hydric Inclusions

For those 404.5 acres of forested wetlands and uplands proposed for designation as hydric and non-hydric inclusions, restoration will include removal of invasive plant species and replacement with desirable plant species (bare-root stock).

2.1.2.4 Invasive Species Control

Invasive plant species such as Chinese tallowtree (*Triadica sebiferum*) will be removed by cutting or herbicidal treatment during initial planting. The percent cover of invasive plants will be monitored during long-term and short-term success monitoring and appropriate action taken if needed.

The primary invasive species of concern at this time is Chinese tallowtree (*Triadica sebiferum*). Forest data plots report percentage of the stands comprised of Chinese tallowtree vary from 1-18% (average 7%) (as of March 2010). As Chinese tallowtree would not be expected to flourish under the conditions of inundation which existed on this site until March 2009, these populations likely began to flourish at that time and are still increasing significantly as of today.

2.1.3 Monitoring

At a minimum, monitoring reports shall be completed in the spring (when new growth makes identification practicable) of Years 1, 3, 5, 10, 15, and prior to and following the first thinning operation. Reports will be submitted by December 31 of each monitoring year.

2.2 Proposed Service Area

2.2.1 Primary/Secondary Service Area

SGBCMB is located primarily in the Amite Hydrologic Unit Code (HUC) 08070202, with a small portion (Tract F) also located in the HUC 08070204. SGBCMB is proposed to primarily serve HUC 08070202 area and secondarily serve the Lake Maurepas watershed (HUC 080702) (Figure 7).

2.3 General Bank Need and Technical Feasibility

SGBCMB is proposed to provide compensatory mitigation for CEMVN approved projects within HUC 08070202 (Primary) encompassing approximately 1,890 sq miles.

Due to flood control projects implemented during the 1950's, the property experienced prolonged inundation until March 2009 when the flood control structure on Alligator Bayou was allowed to remain open. Wetland habitats within the SGBCMB were adversely impacted by this prolonged inundation, including degradation of natural vegetation. Since March 2009 (when the structure was opened), invasive species populations have increased significantly.

Water which once flowed into Spanish Lake via numerous natural waterways on the property now circumvents the lake through man-made/dredged drainageways and flows directly to Alligator Bayou. The dredging of these drainageways throughout the property and the resulting spoil banks prevented the water within historic drainageways from spreading overbank and temporarily inundating the property as it did historically. Access roads constructed for oil and gas activities, ROW construction, and timber harvesting also contributed to the impounding of water on portions of the property.

Adjacent land usage consists predominately of forested (77%) and agricultural (7%) uses, with only 1% listed as vegetated urban (Figure 8).

The populations in Ascension, East Baton Rouge, and Livingston parishes have increased by 36.8 percent, 5.3 percent, and 34.3 percent, respectively, since the 2000 census.

2.4 Future Ownership and Long-Term Management Strategy

2.4.1 Sponsor/Operations Manager/Long-Term Management/ Landowner/Long-Term Ownership

St. Gabriel Land Company, LLC (owner since January 2011)
20104 Philips Street
Baton Rouge, Louisiana 70817
(225) 612-2583
SGBCMB@SGLC.com
POC: Hillary LeBlanc

2.4.2 Agent

GEC, Inc. (GEC)
9357 Interline Avenue
Baton Rouge, Louisiana 70809
(225) 612-3000
POC: Leonard McCauley

2.4.3 Perpetual Site Protection Mechanism

SGBCMB will be protected in perpetuity by conservation servitude pursuant to Louisiana Revised Statute 9:1271 *et seq.* The servitude will be held by a conservation-oriented 501(c)(3) organization to be determined. The servitude will inure and run with the property title.

The servitude will prohibit activities, such as clear cutting, fill discharges, cattle grazing, or other commercial surface development that would diminish the quality or quantity of restored wetlands.

A property boundary survey (2010) is included in Appendix C.

2.4.4 Sponsor Qualifications

St. Gabriel Land Company, LLC has 80 years of combined experience in land management, forestry, and real estate development. Additionally, St. Gabriel Land Company, LLC has on staff a former Louisiana State Lands Office attorney and consults with GEC, Inc., who has established and assists in management of over 5,000 acres of mitigation banks and

has experience in planning and implementing habitat restoration and conservation projects.

3.0 ECOLOGICAL AND SITE SUITABILITY

3.1 Summary of Current Site Conditions

3.1.1 Current and Previous Land Uses

The majority of the site is currently used for recreational activities (i.e. hunting and fishing). Oil and gas production leases exist on 208 acres of the site.

SGBCMB lands were historically bottomland hardwood and baldcypress swamp, portions of which were cleared for timber harvesting, oil and gas production, and pipeline ROW construction prior to 1970. This is confirmed by aerial photography maintained by CEMVN. Since property acquisition in 2011, the property has been used only for oil and gas production and recreational activities.

3.1.2 Current Vegetation

Vegetation surrounding Spanish Lake and the separate northeastern tract consists of baldcypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatic*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), sugarberry (*Celtis laevigata*), persimmon (*Diosoyris virginiana*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), cherrybark oak (*Quercus pagoda*), and Nuttall oak (*Quercus nuttalli*). Vegetation within the oil and gas fields consists of scrub-shrub habitat. The species composition is predominately wax-myrtle (*Myrica cerifera*), winterwillow (*Baccharis halimifolia*), rattlebox (*Quercus pagoda*), coffeeweed (*Sesbania herbacea*), and stunted Chinese tallow (*Triadica sebifera*). Other species include buttonbush (*Cephanlanthus occidentalis*),

Vegetation within forested areas throughout the property predominately consists of Drummond red maple (*Acer rubrum* var. *drummondii*), Chinese tallow (*Triadica sebifera*), and black willow (*Salix nigra*). Other non-dominant species include honeylocust (*Gleditsia triacanthos*), sweet pecan (*Carya illinoensis*), water hickory (*Carya aquatic*), sweetgum (*Liquidambar straciflua*), American sycamore (*Platanus occidentalis*), diamondleaf oak (*Quercus obtuse*), live oak (*Quercus virginiana*), persimmon and box elder (*Acer negundo*). The sapling/ shrub layer consist of the aforementioned species as well as deciduous holly (*Ilex*

deciduas), roughleaf dogwood (*Cornus drummondii*), swamp privet (*Forestiera acuminata*), planer tree (*Planera aquatic*), Chinese privet (*Ligustrum sinsense*), and hawthorn (*Crataegus spp.*).

All of the plots (Figure B-1 and Table B-1), forested and non-forested, passed the dominance test, indicating that wetland vegetation predominates these areas and the site in general. Appendix B presents forest data collected in March 2010, including species composition, percent canopy, and average age of hard mast species.

3.1.3 Current Hydrology

Historically, water flowed to Spanish Lake from numerous bayous, including draining over 41,000 acres. Spanish Lake drains to Bayou Manchac via Alligator Bayou, which then drains to the Amite River and on to Lake Maurepas. Lands to the south of the site drained to Spanish Lake via Bayou Braud; lands to the west of the site drained to Spanish Lake via Bayou Paul; and lands to the south and east of the site drained to Spanish Lake via First Bayou, Launce Bayou, and Lil Bayou. Well pads and access roads associated with oil and gas exploration impounded forested wetlands on the site, and several flood control projects were constructed during the 1950's in the Spanish Lake basin that adversely impacted surface hydrology and ecological habitat quality on the site. These projects included the construction of a flood control structure on Alligator Bayou at the location of its discharge to Bayou Manchac, as well as the dredging of new channels for Bayou Paul and Bayou Braud through the site for improved conveyance. The new channels for Bayou Paul and Bayou Braud no longer drain to Spanish Lake, but converge and flow around Spanish Lake to the south and east, discharging directly to Alligator Bayou. A new canal was constructed across the site which flows toward the east and drains to Bayou Braud just south of Spanish Lake. The flood control structure on Alligator Bayou was operated in a manner which caused long-term prolonged flooding and ecosystem decline within the Spanish Lake basin until March 2009.

Currently, forested wetlands on-site remain impounded due to access roads, well pads, and spoil banks along those channels which were dredged or constructed in the 1950's. The northeastern portion of the site currently flows directly to Alligator Bayou; the western portion of the site currently flows to Bayou Paul; and the southern portion of the site flows to First Bayou, Launce Bayou, and Lil Bayou or to Bayou Braud (Figure 9).

3.1.4 Current Soils

The Iberville and Ascension Parishes Soil Survey maps the sites soils as Dowling association (DO) frequently flooded, Fausse association (FA), Schriever clay (Sb) 0 to 1% slopes, Schriever clay (Se) frequently flooded, Sharkey clay (Sg), and Sharkey clay (Sk) frequently flooded. Figure 10 presents the current soils within the project area.

All of these soils are listed as hydric soils in *Soil mapping Units and Hydric soils Designations of Louisiana* (NRCS 1995). A wetland delineation conducted by Natural Resource Professionals, LLC in October 2008 confirmed that these soils retain hydric indicators and are wetland soils.

Portions of the site have been labeled by NRCS as “water” which are currently shown as scrub/shrub on Figure 3. Data collected for NRCS soil maps were gathered while structure while the flood control structure at Alligator Bayou was closed and these areas were inundated. Soil data has been gathered on newly exposed areas (since the structure was opened in March 2009), indicating that these soils have a 6-inch organic clay horizon underlain by heavy clays typical of surrounding areas.

Soil samples have been taken within this property which show pockets of high salinity in an isolated area. Sample analysis also indicated that the salts present in the soil were bound to soil particles and are not readily bioavailable.

Two test transects traversing areas of high salinity were planted with baldcypress to verify restoration feasibility, and preliminary results indicate no adverse impacts from salinity to survivability of plantings.

3.1.5 Property Encumbrances

Upon Bank approval, oil/gas leases listed below and shown on Figure 3 will be extinguished on all Bank lands. Well-pads to remain will exist only outside of Bank boundaries. Pipeline ROWs listed below are shown on Figure 11.

Tract A:	ROW:	Gulf South Gas Pipeline Company, LP
Tract B:	ROW:	Gulf South Gas Pipeline Company, LP
		Entergy, et al.
		Proxair, Inc., et al.
	Well Pads:	Pedernales Production, LP

Oil/gas leases (by Rio Bravo Energy Partners, LLC), both in southwestern portion of property:

165 acres (Shell 10# Offset)

43 acres (Goston Re-entry)

Pipeline ROWs:

Pipe Line Corridor	Company	Location	Width
#1 (Entergy et al.)	Entergy	Section 13	300 ft
	Air Products	Section 13	30 ft
	Shell	Section 13	50 ft
	Texaco	Section 13	30 ft
	Total	Section 13	410 ft
#2	Liquid Carbonics	Section 13	20 ft
# 3	United Gas	Section 13 & 18	95 ft

3.1.6 Zoning and Adjacent Property Development

SGBCMB and adjacent property is within unincorporated land and is absent of zoning regulations. SGBCMB is connected to and surrounded by natural and man-made tributaries and forested wetland areas that create buffers to anthropogenic affects from land use alterations.

3.1.7 Jurisdictional Determination

The jurisdictional determination from CEMVN, dated December 17, 2008, is included in Appendix D.

3.2 Water Rights and Hydrological Influences

3.2.1 Water Rights

Louisiana Civil Code, Article 490, treats water resources under the theory of absolute ownership and rule of capture, provided capture does not result in harm to neighbors.

3.2.2 Structural Hydrological Management

Spoil bank openings, low water crossings and culverts will be passively maintained unless hydrologic monitoring reports reveal a need for

maintenance, at which time appropriate action will be taken with IRT approval.

3.2.3 General Watershed Characteristics

3.2.3.1 Water Sources and Losses

The sources of water include direct precipitation, runoff from adjacent properties, and flows in numerous drainageways. The average annual precipitation in the vicinity of the project area is approximately 57.2 inches. July is the wettest month of the year with an average precipitation of 6.5 inches, and October is the driest month of the year with an average precipitation of 2.7 inches. Average annual runoff ranges from 12 to 20 inches in this region. Evaporation exceeds rainfall seven months of the year in this region.

3.2.4.2 Hydroperiod

Hydric soils indicate that the site is inundated for at least 14 consecutive days per year. This site is comprised primarily of Sharkey and Fausse soils, which, in this area, typically have a seasonal high water table between the surface and two feet below the surface during the months of December and April.

From the 1950's until March 2009, the flood control structure located at Alligator Bayou was operated in a manner which unnaturally held the water level in the Spanish Lake Basin at an stage height of approximately 5 feet NAVD88 (per USGS gauge data from the station adjacent to the control structure). Since the Alligator Bayou flood control structure was opened in March 2009, the normal pool is now held at 0.75 to 1 foot NAVD88. Following a 1-inch rain event, the stage rises to approximately 4 to 4.5 ft within the Spanish Lake basin and returns to 0.75 to 1 foot within approximately five days (according to stage data from USGS gauge data from the station adjacent to the control structure). The level of flooding associated with these stage conditions is appropriate for restoration of wetland areas and approximates natural conditions, with the exceptions of not allowing flood waters within the basin to crest with Bayou Manchac (by closing of the gate during high stage in the bayou) and the flow restriction associated with the size of control structure. Figure 12 depicts flooding conditions within the basin at stages of 5 and 7 feet.

3.2.4.3 Drainage Area

The drainage area has been estimated based on topographic maps and HUC areas. The drainage area is bound on the west and south by the Mississippi River levee, on the north by Bayou Manchac, and on the east by Louisiana Highways 3115, 74, and 928 (Figure 13).

4.0 CONCLUSION

In summary, the SGBCCMB has the potential to re-establish, rehabilitate, enhance, and preserve 1642.2 acres of forested wetlands. These lands will be protected and maintained by conservation servitude. Proposed credit determinations are included as Appendix E.

5.0 REFERENCES

Code of Federal Regulations, Title 33, Parts 325 and 332 and Title 40, Part 230, as published on pages 19594-19704 in the Federal Register dated 10 April 2008.

United States Department of Agriculture – Natural Resources Conservation Service, Web Soil Survey, Iberville Parish, Louisiana, Retrieved December 2010.
http://soils.usda.gov/survey/online_surveys/louisiana/index.html

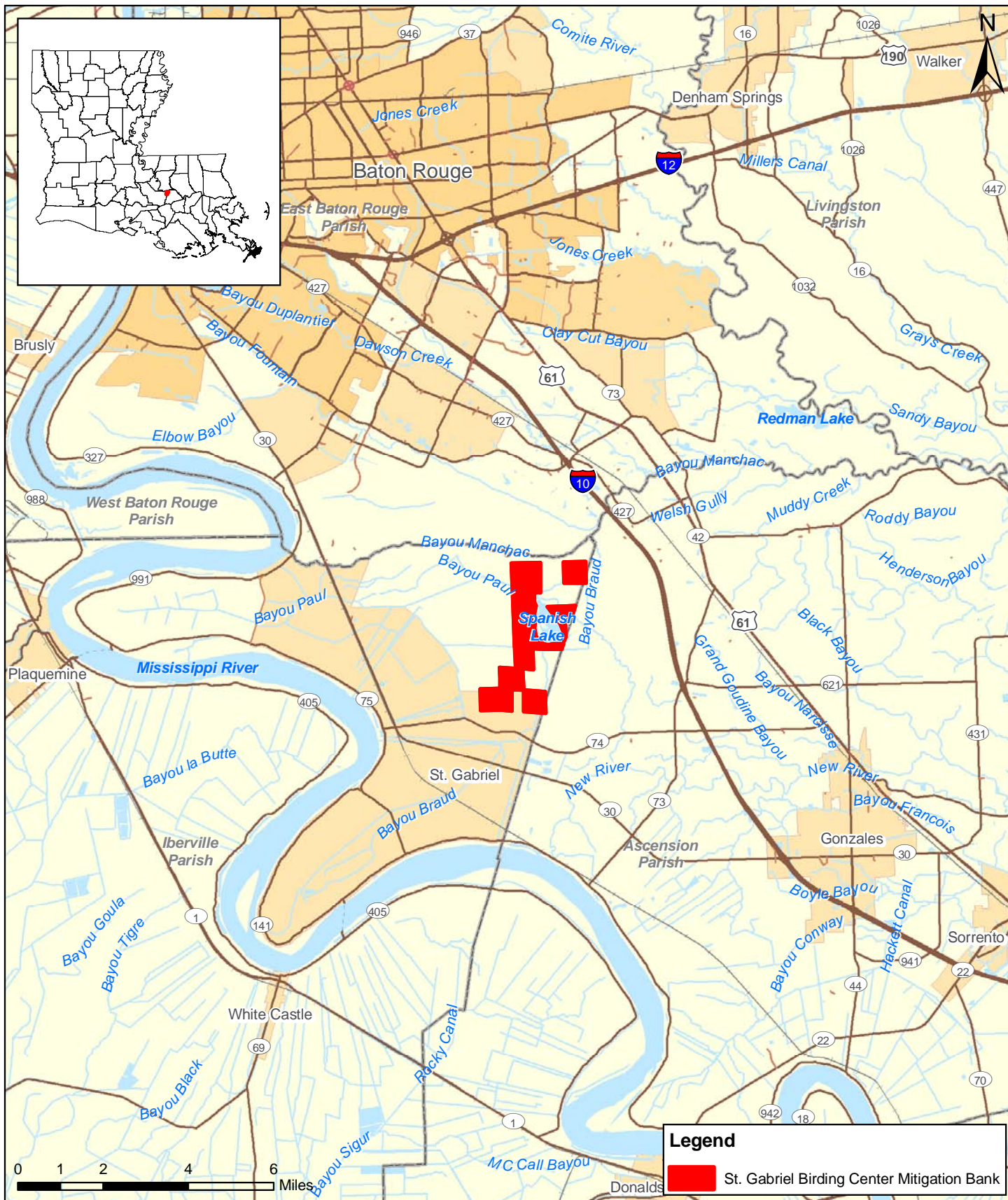
United States Department of Agriculture – Natural Resources Conservation Service, Web Soil Survey, Ascension Parish, Louisiana, Retrieved December 2010.
http://soils.usda.gov/survey/online_surveys/louisiana/index.html

United States Department of Agriculture – Natural Resources Conservation Service, PLANTS Database – USDA PLANTS, Retrieved June 2009.
<http://plants.usda.gov/>

Louisiana Department of Environmental Quality 303(d) Impaired Waterbodies List, 2008.

Appendix A

FIGURES



ST. GABRIEL BIRDING CENTER MITIGATION BANK LOCATION MAP

Ascension and Iberville Parishes, Louisiana

Base Map: ESRI



Gulf Engineers & Consultants

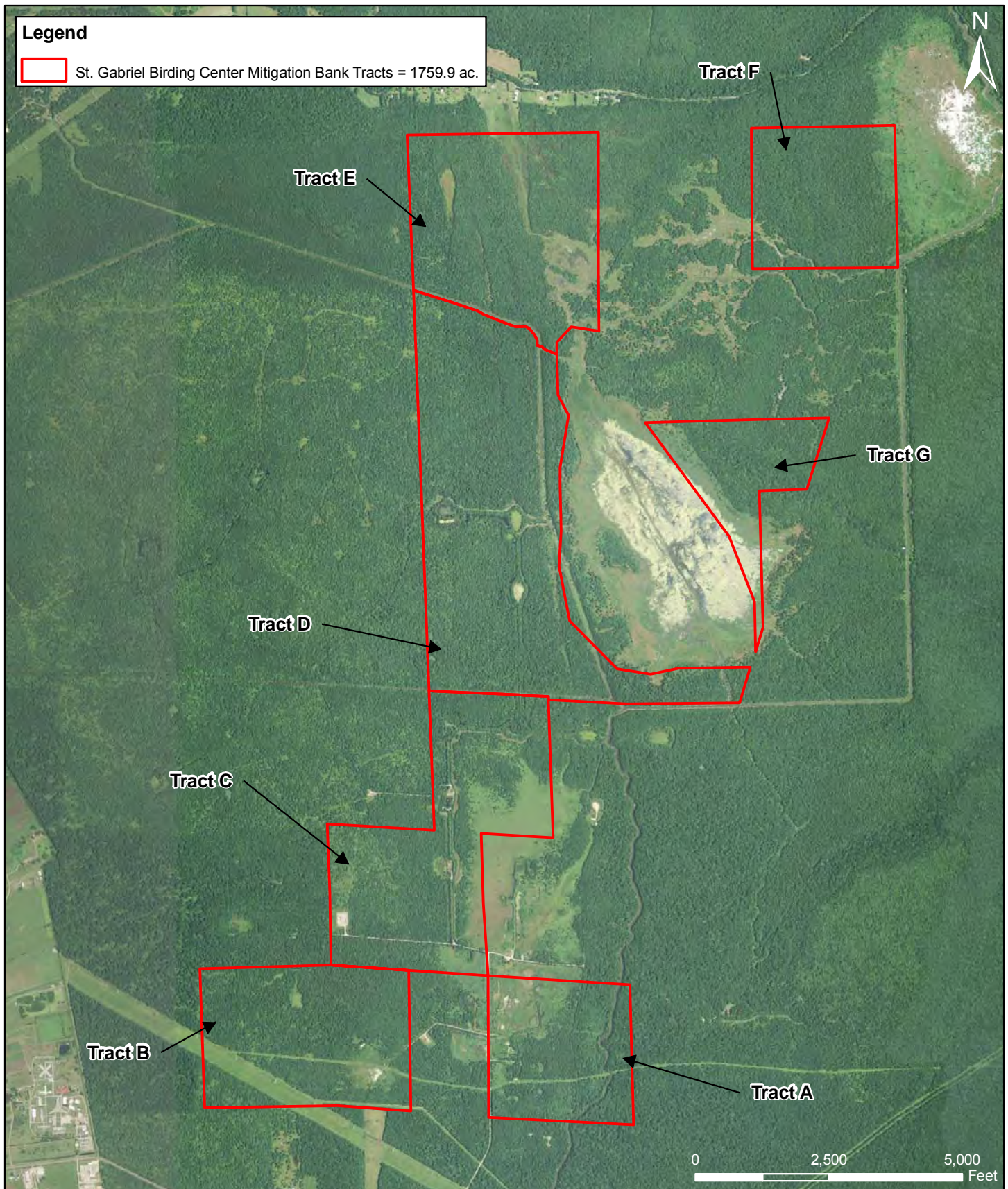
Figure: 1

Date: January 2011

Scale: 1:200,000

Source: ESRI/GEC

Map ID: 277035101-2304



**ST. GABRIEL BIRDING CENTER MITIGATION BANK
2010 AERIAL PHOTO**

Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

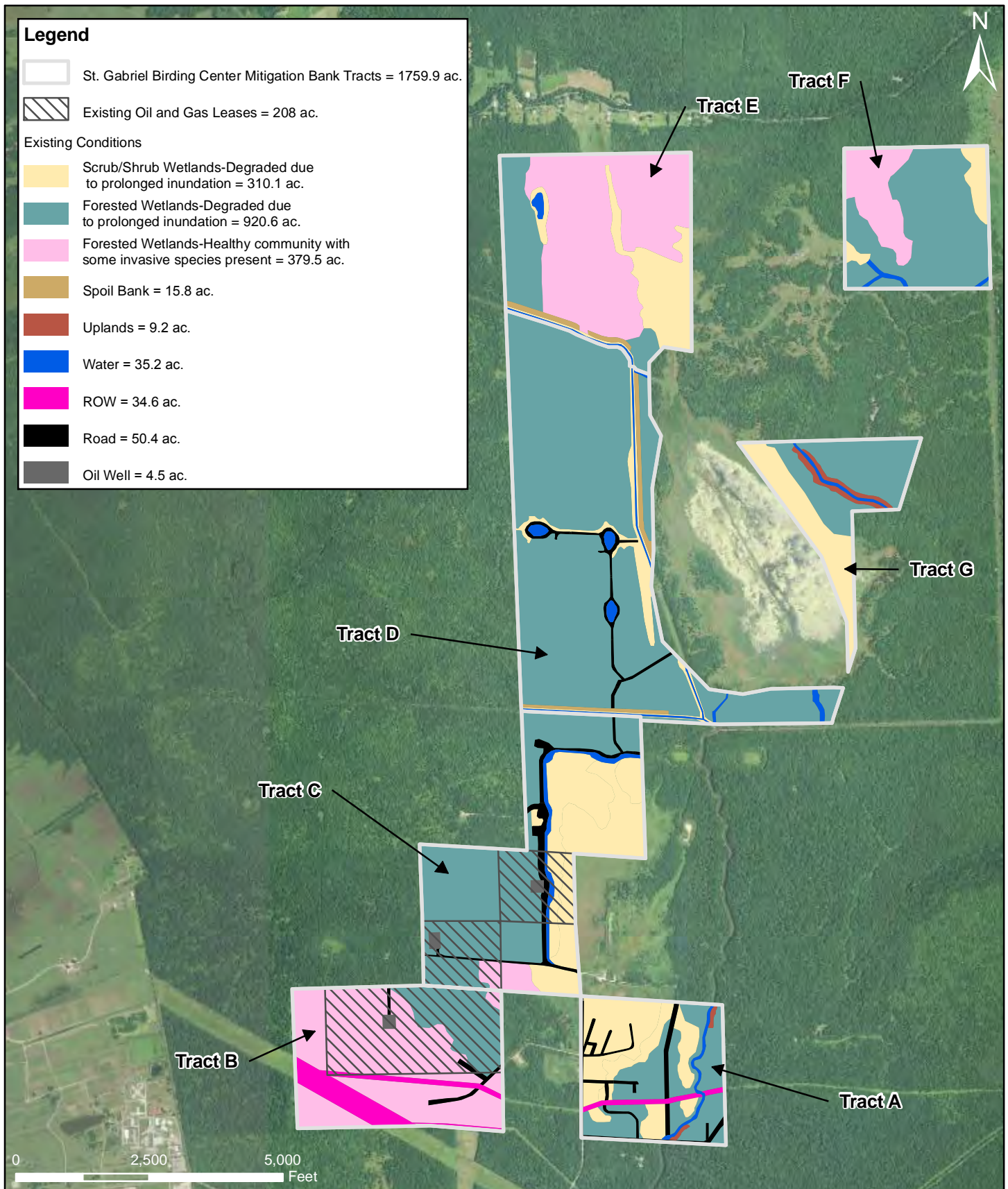
Figure: 2

Date: January 2011

Scale: 1:30,000

Source: USDA/GEC

Map ID: 277035101-2619



ST. GABRIEL BIRDING CENTER MITIGATION BANK EXISTING CONDITIONS

Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

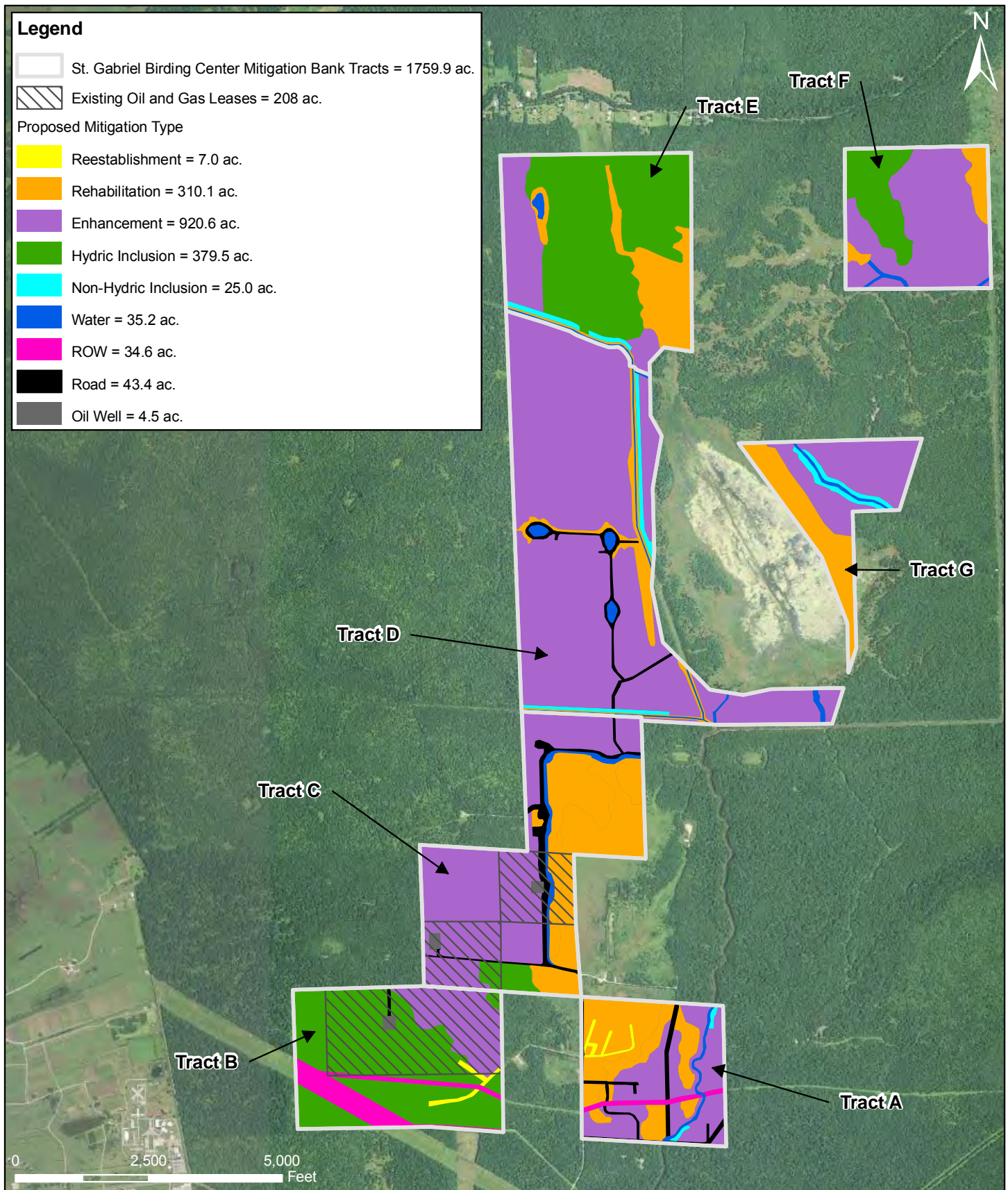
Figure: 3

Date: April 2011

Scale: 1:30,000

Source: USDA/GEC

Map ID: 277035101-2622



**ST. GABRIEL BIRDING CENTER MITIGATION BANK
PROPOSED MITIGATION TYPES - ALL TRACTS**
Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

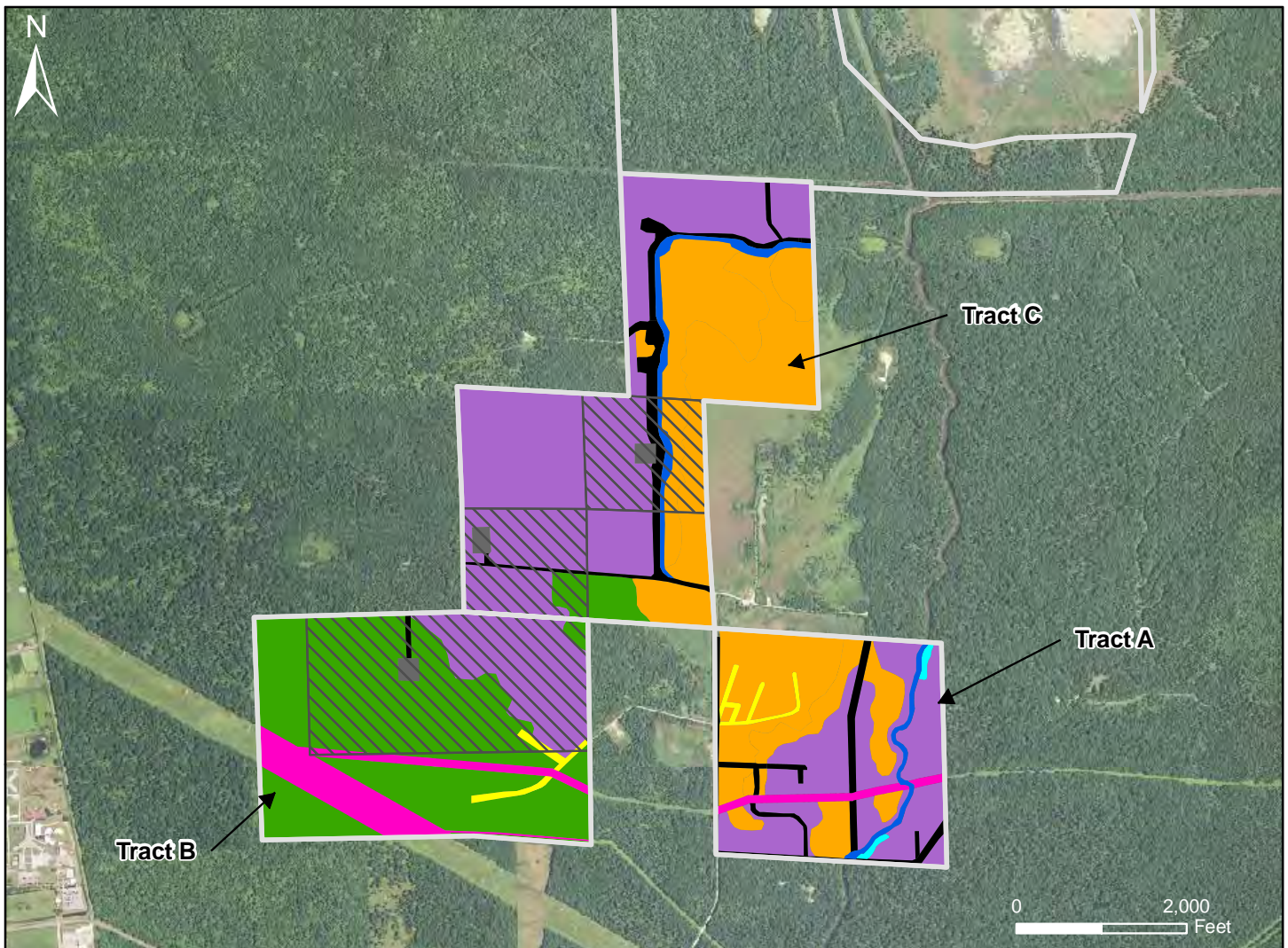
Figure: 4

Date: April 2011

Scale: 1:30,000

Source: USDA/GEC

Map ID: 277035101-2614



Legend

St. Gabriel Birding Center Mitigation Bank Tracts		
Tract A Mitigation Types = 163.0 ac.	Tract B Existing Oil and Gas Lease = 123 ac.	Tract C Existing Oil and Gas Leases = 85 ac.
Reestablishment = 3.4 ac.	Reestablishment = 3.6 ac.	Tract C Mitigation Types = 311.6 ac.
Rehabilitation = 65.3 ac.	Enhancement = 43.8 ac.	Rehabilitation = 109.4 ac.
Enhancement = 68.6 ac.	Hydric Inclusion = 156.6 ac.	Enhancement = 160.5 ac.
Non-Hydric Inclusion = 1.5 ac.		Hydric Inclusion = 11.9 ac.
Water = 4.0 ac.		Water = 9.1 ac.
ROW = 5.8 ac.	ROW = 28.8 ac.	
Road = 14.4 ac.	Road = 0.7 ac.	Road = 17.7 ac.
	Oil Well = 1.5 ac.	Oil Well = 3.0 ac.

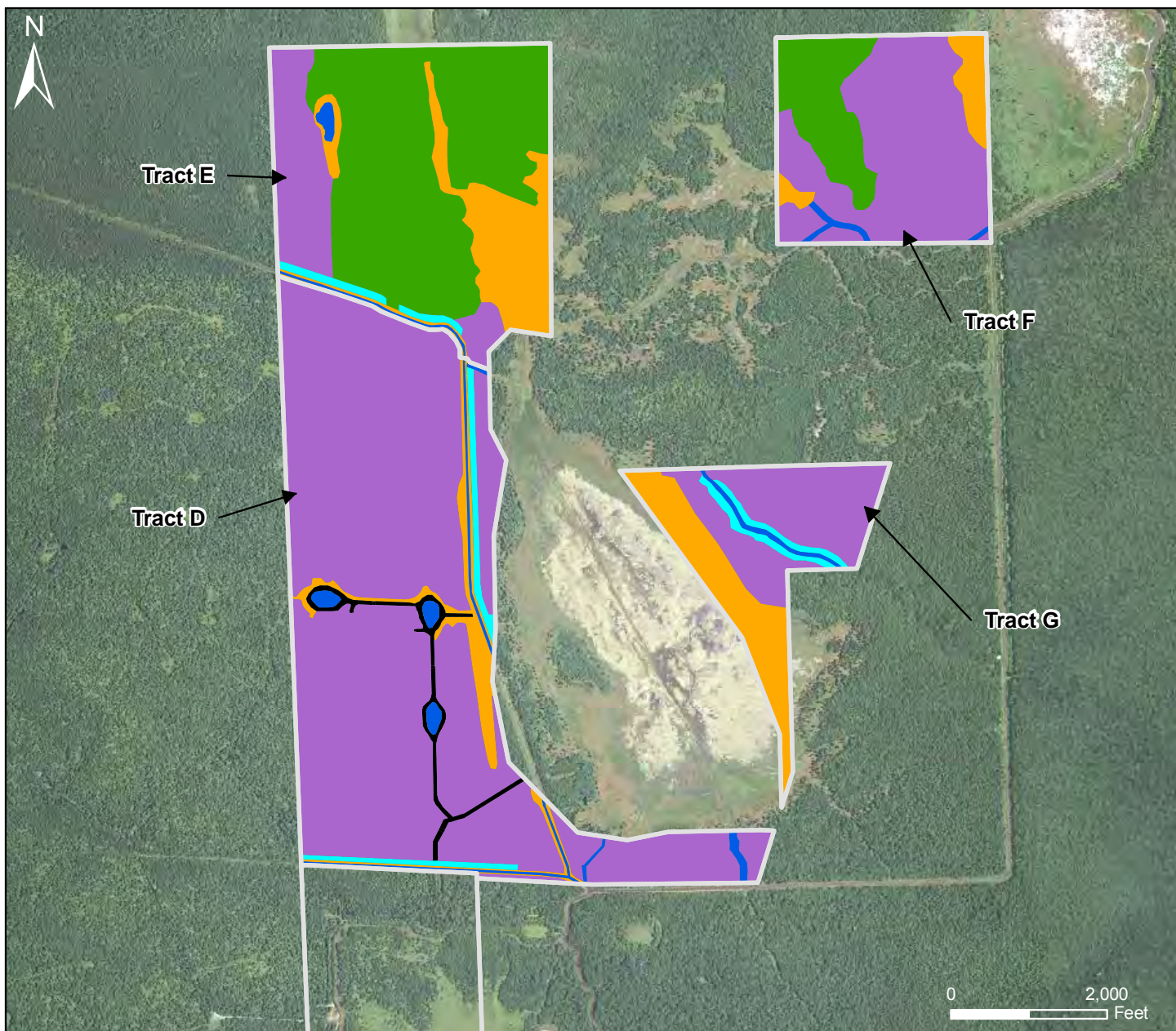
ST. GABRIEL BIRDING CENTER MITIGATION BANK PROPOSED MITIGATION TYPES - TRACTS A, B, and C

Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Figure: 4a
Date: April 2011
Scale: 1:24,000
Source: USDA/GEC
Map ID: 277035101-2612



Legend

St. Gabriel Birding Center Mitigation Bank Tracts

Tract D Mitigation Types = 488.1 ac.

Rehabilitation = 7.9 ac.

Enhancement = 433.1 ac.

Non-Hydric Inclusion = 10.9 ac.

Water = 25.7 ac.

Road = 10.5 ac.

Tract E Mitigation Types = 282.6 ac.

Rehabilitation = 50.0 ac.

Enhancement = 47.9 ac.

Hydric Inclusion = 172.5 ac.

Non-Hydric Inclusion = 4.9 ac.

Water = 7.3 ac.

Tract F Mitigation Types = 164.8 ac.

Rehabilitation = 14.0 ac.

Enhancement = 109.4 ac.

Hydric Inclusion = 38.6 ac.

Non-Hydric Inclusion = 7.7 ac.

Water = 2.8 ac.

Tract G Mitigation Types = 114.8 ac.

Rehabilitation = 42.2 ac.

Enhancement = 62.1 ac.

Non-Hydric Inclusion = 7.7 ac.

Water = 2.8 ac.

ST. GABRIEL BIRDING CENTER MITIGATION BANK PROPOSED MITIGATION TYPES - TRACTS D, E, F, and G Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

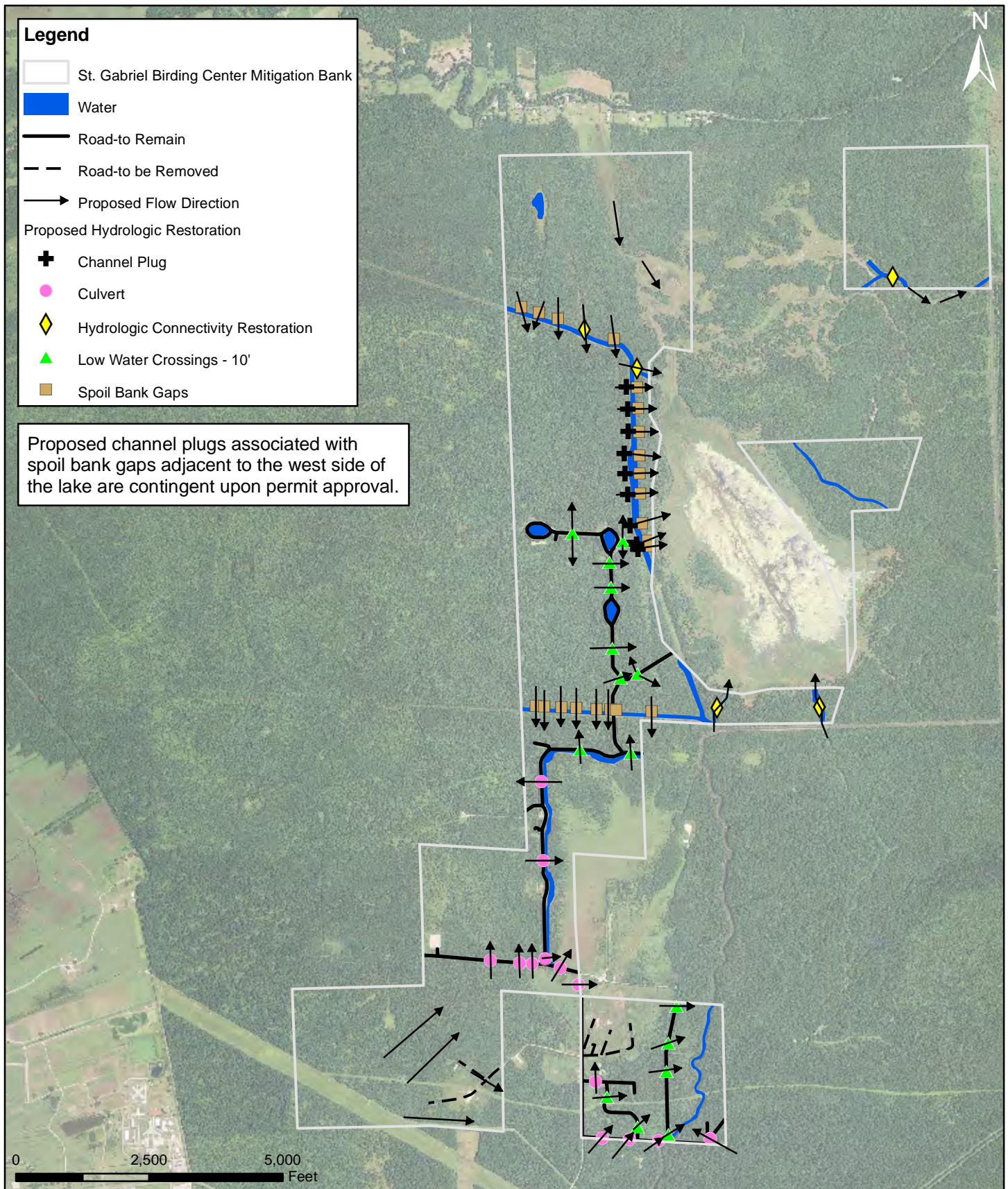
Figure: 4b

Date: April 2011

Scale: 1:24,000

Source: USDA/GEC

Map ID: 277035101-2613



**ST. GABRIEL BIRDING CENTER MITIGATION BANK
PROPOSED HYDROLOGIC RESTORATION**
Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

Figure: 5

Date: April 2011

Scale: 1:30,000

Source: USDA/GEC

Map ID: 277035101-2617



ST. GABRIEL BIRDING CENTER MITIGATION BANK SPECIES ASSEMBLAGE

Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

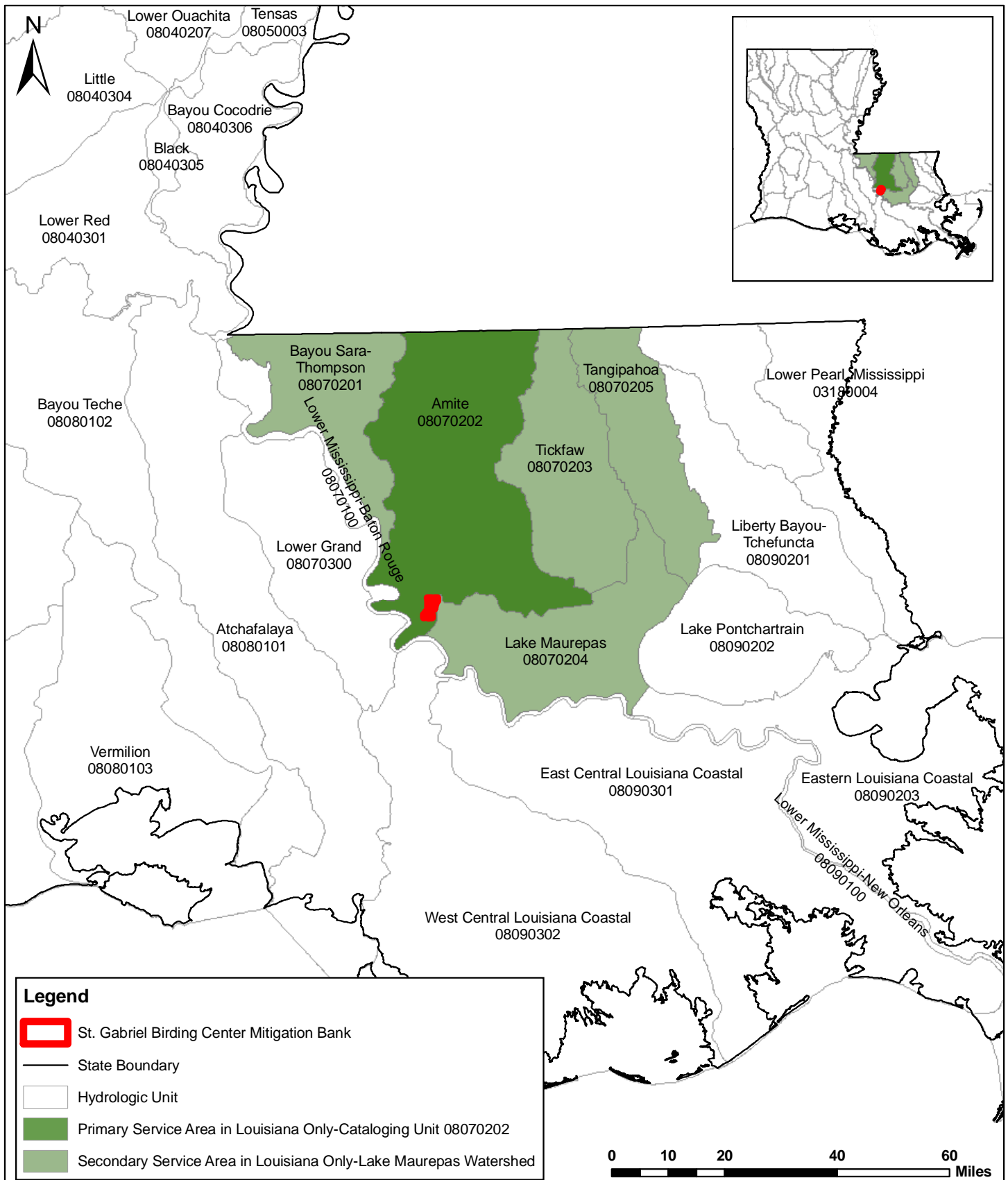
Figure: 6

Date: April 2011

Scale: 1:30,000

Source: USDA/GEC

Map ID: 277035101-2618



ST. GABRIEL BIRDING CENTER MITIGATION BANK SERVICE AREA MAP

Ascension and Iberville Parishes, Louisiana



Gulf Engineers & Consultants

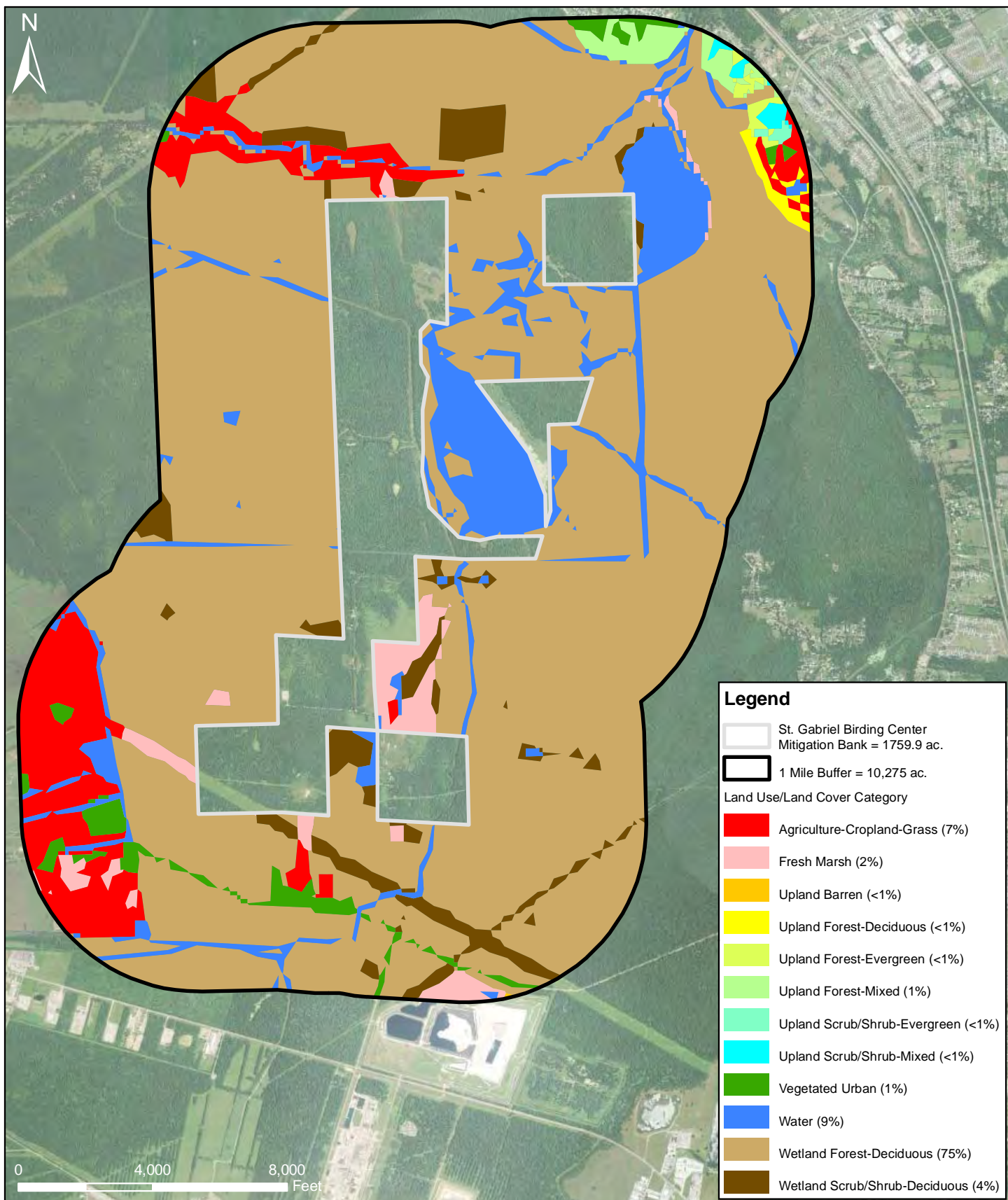
Figure: 7

Date: April 2011

Scale: 1:1,500,000

Source: USGS/GEC

Map ID: 277035101-2616



**ST. GABRIEL BIRDING CENTER MITIGATION BANK
LAND USE/LAND COVER WITHIN 1 MILE BUFFER**
Ascension and Iberville Parishes, Louisiana

*Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic
Land Use/Land Cover Data: USGS, Biological Research Division, National Wetlands Research Center*



Gulf Engineers & Consultants

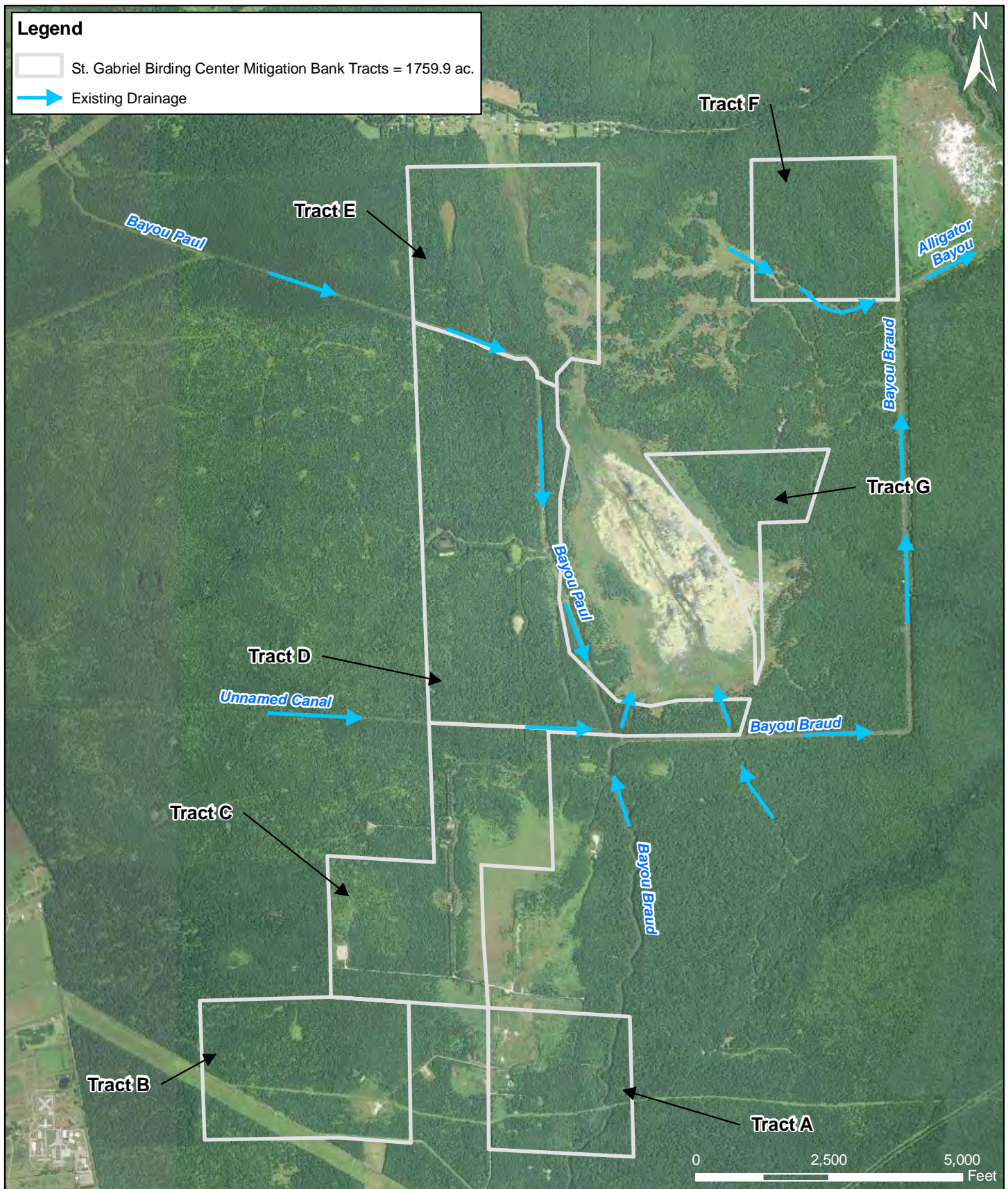
Figure: 8

Date: April 2011

Scale: 1:48,000

Source: USDA/USGS/GEC

Map ID: 277035101-2615



ST. GABRIEL BIRDING CENTER MITIGATION BANK EXISTING DRAINAGE

Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

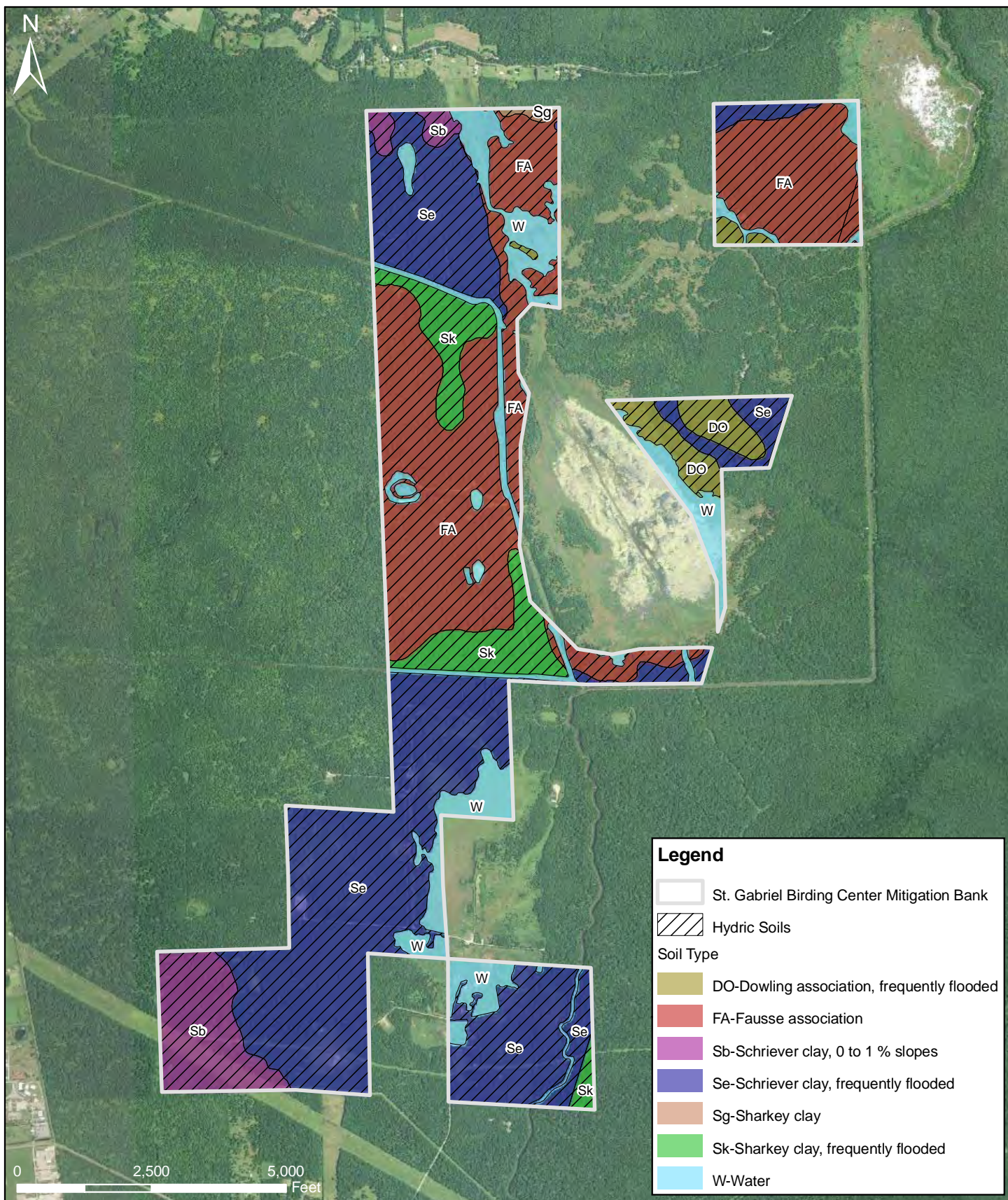
Figure: 9

Date: April 2011

Scale: 1:30,000

Source: USDA/GEC

Map ID: 277035101-2619



ST. GABRIEL BIRDING CENTER MITIGATION BANK SOILS MAP

Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

Figure: 10

Date: April 2011

Scale: 1:30,000

Source: NRCS/GEC

Map ID: 277035101-2621



ST. GABRIEL BIRDING CENTER MITIGATION BANK PIPELINE RIGHTS OF WAY

Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic



Gulf Engineers & Consultants

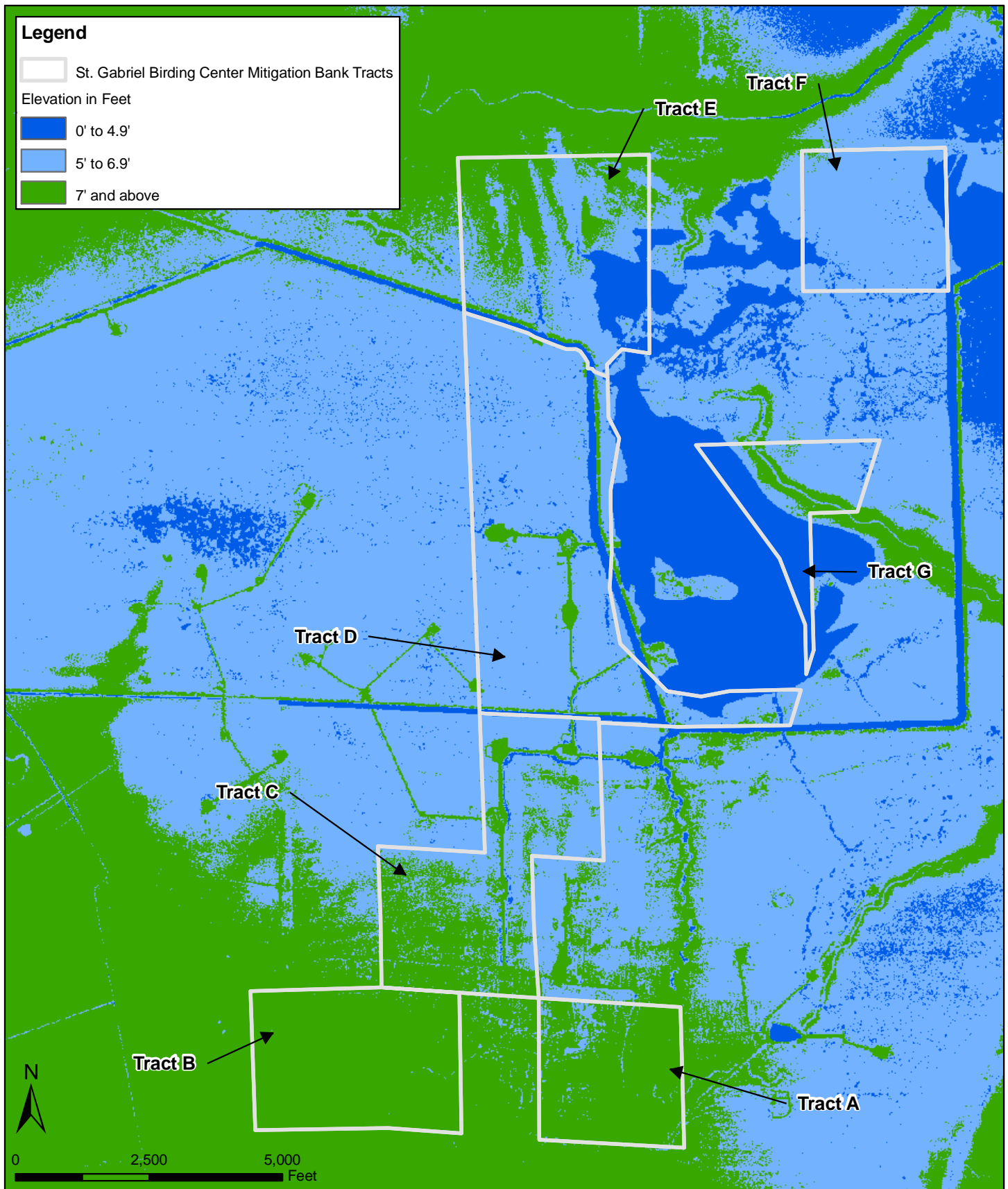
Figure: 11

Date: April 2011

Scale: 1:18,000

Source: USDA/GEC

Map ID: 277035101-2612



ST. GABRIEL BIRDING CENTER MITIGATION BANK LIDAR ELEVATION MAP

Ascension and Iberville Parishes, Louisiana

Elevation Data: LOSCO 1999 LIDAR DEM (ESRI Grid) downloaded from www.atlas.lsu.edu



Gulf Engineers & Consultants

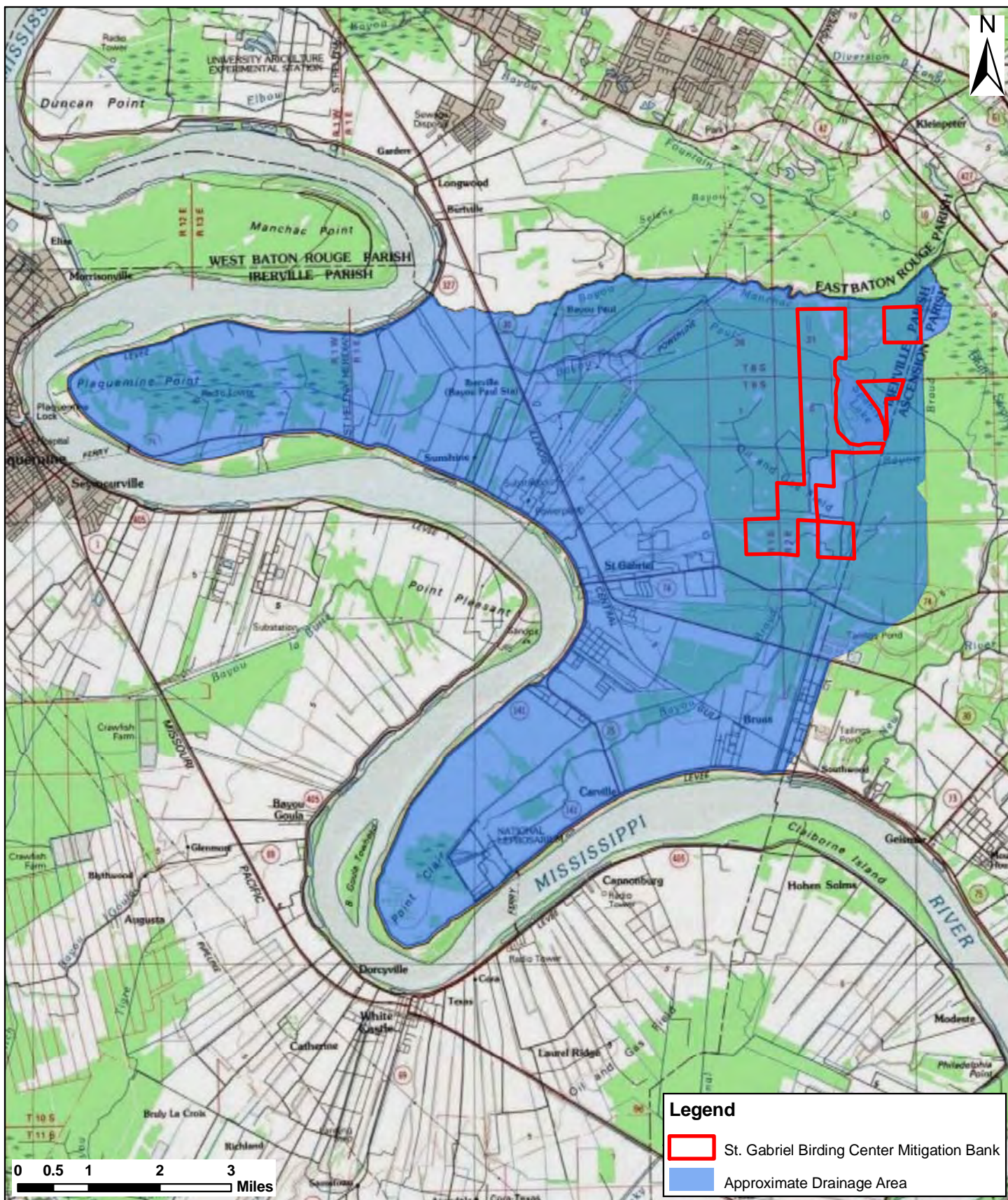
Figure: 12

Date: April 2011

Scale: 1:30,000

Source: LOSCO/GEC

Map ID: 277035101-2614



Gulf Engineers & Consultants

Figure: 13

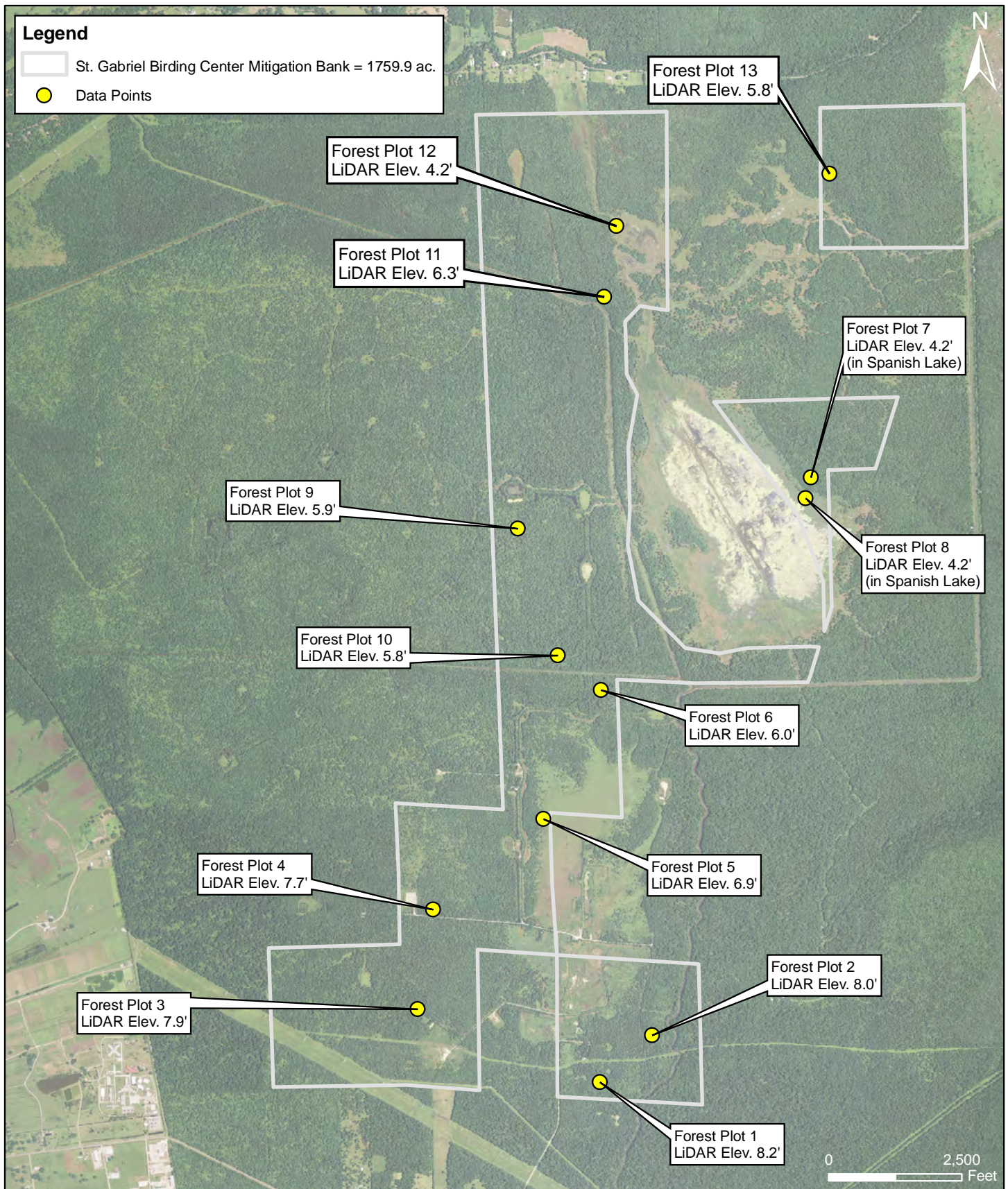
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Source: USGS/GEC

Map ID: 277035101-2620

Appendix B
CURRENT FOREST
HEALTH DATA



**ST. GABRIEL BIRDING CENTER MITIGATION BANK
DATA POINT ELEVATIONS FROM LIDAR**
Ascension and Iberville Parishes, Louisiana

Image: 2010 Iberville Parish USDA-FSA-APFO NAIP MrSID Mosaic
Elevation Data: LOSCO 1999 LiDAR DEM (ESRI Grid) downloaded from www.atlas.lsu.edu



Gulf Engineers & Consultants

Figure: B-1

Date: April 2011

Scale: 1:30,000

Source: LOSCO/USDA/GEC

Map ID: 277035101-2618

Table B-1: Forest Data

Plot (1/10 acre)	Elevation (NAVD 88)	Tree Stratum Cover	Herb Stratum Cover	Species	Stems/Plot	Basal Area (ft ² /acre)	Estimated Growth Rate (cm DBH/year)
Plot 1	8.2	80%	65%	<i>Acer rubrum</i>	6	2.7	
				<i>Fraxinus pennsylvanica</i>	3	1.0	
				<i>Ulmus americana</i>	2	2.2	
				<i>Celtis leavigata</i>	1	0.4	
				<i>Quercus lyrata</i>	1	0.3	0.30 - 0.40 cm
				<i>Gleditsia aquatica</i>	1	0.4	
				Total	14	71.1	
Plot 2	8	70%	56%	<i>Acer rubrum</i>	2	0.9	
				<i>Fraxinus pennsylvanica</i>	2	1.0	
				<i>Ulmus americana</i>	2	1.5	
				<i>Celtis leavigata</i>	1	0.2	
				<i>Quercus lyrata</i>	1	0.0	0.30 - 0.40 cm
				<i>Gleditsia aquatica</i>	4	3.0	
				<i>Liquidambar straciflua</i>	6	2.0	
				Total	18	86.0	
Plot 3	7.9	74%	75%	<i>Celtis leavigata</i>	8	6.3	
				<i>Quercus laurifolia</i>	1	3.3	1.5 - 2.0 cm
				<i>Acer rubrum</i>	3	1.9	
				<i>Liquidambar straciflua</i>	2	2.4	
				Total	14	138.6	
Plot 4	7.7	18%	111%	<i>Salix nigra</i>	3	0.4	
				<i>Sapium sebiferum</i>	2	0.8	
				Total	5	11.4	
Plot 5	6.9	14%	109%	<i>Gleditsia aquatica</i>	1	0.4	
				<i>Carya aquatica</i>	1	0.2	
				<i>Salix nigra</i>	1	0.2	
				<i>Sapium sebiferum</i>	1	0.2	
				Total	4	10.3	
Plot 6	6	54%	81%	<i>Carya aquatica</i>	9	5.5	
				<i>Fraxinus pennsylvanica</i>	1	0.3	
				<i>Celtis leavigata</i>	2	1.4	
				<i>Quercus lyrata</i>	4	3.7	0.2 cm
				<i>Planera aquatica</i>	2	0.7	
				Total	18	116.0	
Plot 7	4.2	77%	94%	<i>Sapium sebiferum</i>	5	1.5	
				<i>Gleditsia aquatica</i>	5	2.4	
				<i>Quercus lyrata</i>	2	2.5	0.2 - 0.3 cm
				<i>Taxodium distichum</i>	7	1.6	
				<i>Diospyros virginiana</i>	1	0.2	
				Total	20	81.7	
Plot 8 *	4.2	45%	18%	<i>Salix nigra</i>	---	---	
				<i>Sesbania drummondii</i>	---	---	
Plot 9	5.9	75%	30%	<i>Acer rubrum</i>	23	6.2	
				<i>Planera aquatica</i>	4	0.9	
				<i>Nyssa aquatica</i>	2	0.7	
				<i>Quercus nuttallii</i>	1	0.2	0.2 cm
				<i>Carya aquatica</i>	1	0.4	
				Total	31	83.0	
Plot 10	5.8	71%	81%	<i>Acer rubrum</i>	6	1.3	
				<i>Carya aquatica</i>	3	1.4	
				<i>Quercus lyrata</i>	3	2.3	0.2 - 0.4 cm
				<i>Celtis leavigata</i>	1	0.2	
				<i>Taxodium distichum</i>	1	1.6	
				<i>Nyssa aquatica</i>	1	0.9	
				<i>Planera aquatica</i>	1	0.1	
				<i>Fraxinus pennsylvanica</i>	1	0.5	
				Total	17	84.1	
Plot 11	6.3	90%	68%	<i>Ulmus americana</i>	3	0.5	
				<i>Quercus lyrata</i>	7	5.8	0.2 - 0.3 cm
				<i>Quercus scumardii</i>	1	0.1	
				<i>Ulmus crassifolia</i>	4	0.7	
				<i>Celtis leavigata</i>	3	0.6	
				Total	18	76.9	
Plot 12	4.2	15%	113%	<i>Taxodium distichum</i>	1	0.4	
				Total	1	4.4	
Plot 13	5.8	70%	51%	<i>Ulmus americana</i>	2	0.8	
				<i>Quercus lyrata</i>	6	1.8	0.1 - 0.2 cm
				<i>Fraxinus pennsylvanica</i>	10	1.9	
				<i>Celtis leavigata</i>	2	0.2	
				<i>Ulmus crassifolia</i>	1	0.1	
				<i>Carya aquatica</i>	7	2.6	
				Total	28	74.2	

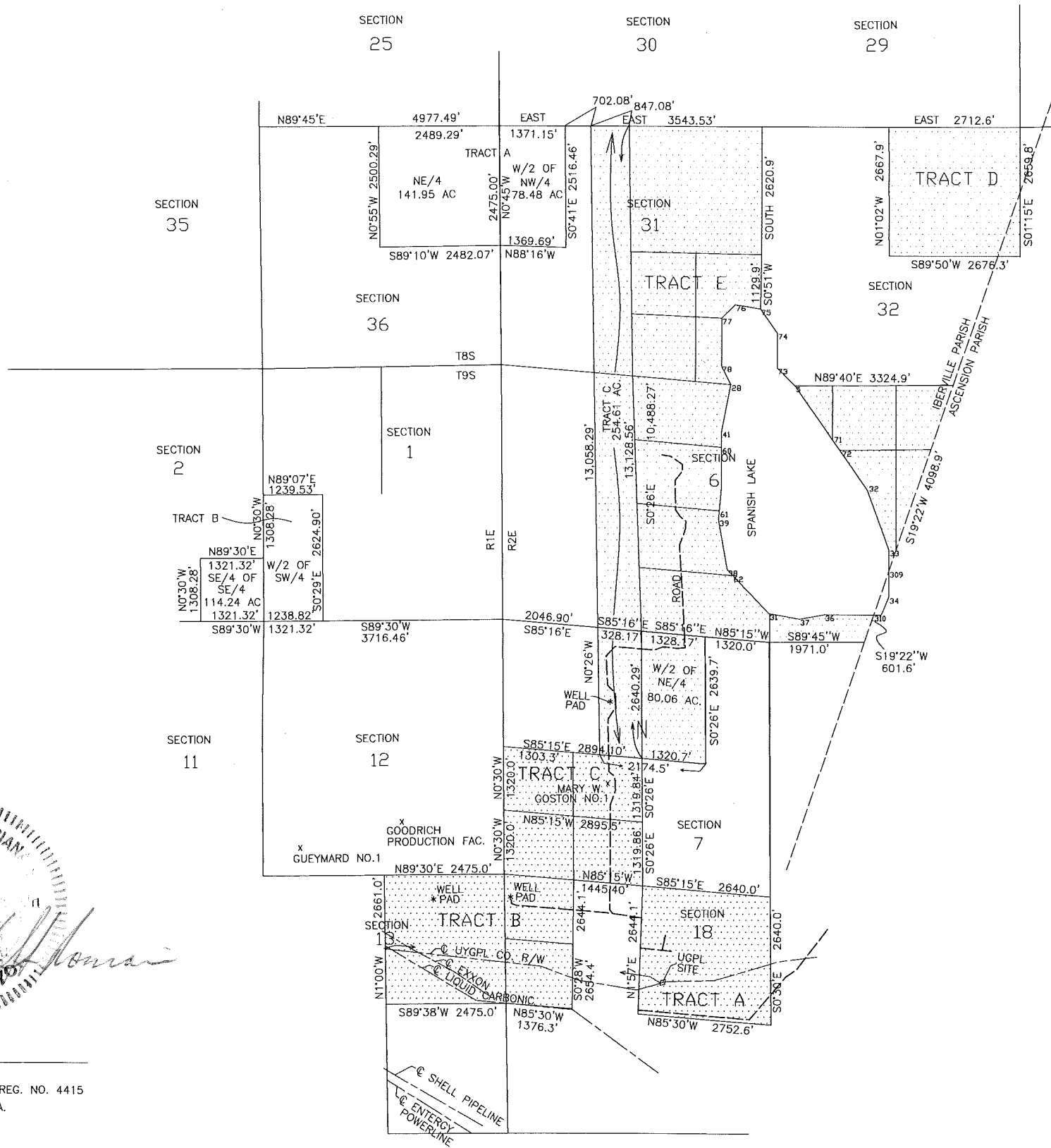
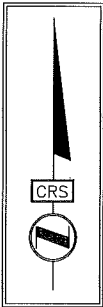
Note * : No trees present, sapling stratum percent cover shown.

Appendix C

PROPERTY BOUNDARY SURVEY

IBERVILLE PARISH LOUISIANA

ASCENSION PARISH LOUISIANA

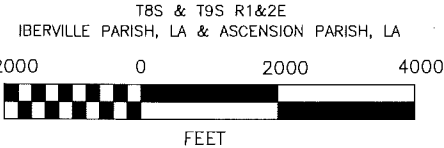


NO FIELD WORK WAS PERFORMED IN THE PREPARATION OF THIS DRAWING, ALL INFORMATION WAS OBTAINED FROM THE GLO PLATS AND FIELD NOTES, PARISH BOUNDARY DESCRIPTIONS AND TITLE ABSTRACTS FURNISHED BY THE CLIENT.

75-76	N80°00'W	258.0'	
76-77	S45°00'W	396.0'	
77-78	SOUTH	990.0'	
78-28	S26°31'E	435.5'	
28-41	S10°48'W	987.1'	
41-60	SOUTH	338.9'	309-33 NORTH 444.7'
60-40	SOUTH	849.1'	33-32 N20°00'W 132.0'
40-61	S5°00'W	473.2'	32-72 N35°00'W 1011.6'
61-39	S5°00'W	186.8'	72-71 N35°00'W 255.4'
39-38	S10°00'E	1056.0'	71-5 N35°00'W 1373.0'
38-62	S43°15'E	166.5'	
62-31	S43°15'E	1087.5'	
31-37	S80°09'E	639.6'	
37-36	N80°00'E	528.0'	
36-310	EAST	1022.9'	

TRACT	TOTAL AC.	AC. ROAD/ SERV. WELL PADS	NET AC.
A	163.1	9.2	153.9
B	324.4	14.6	309.8
C	87.3	4.1	83.2
D	164.8	N/A	164.8
E	1020.3	12.5	1007.8
TOTALS	1759.9	40.3	1719.6

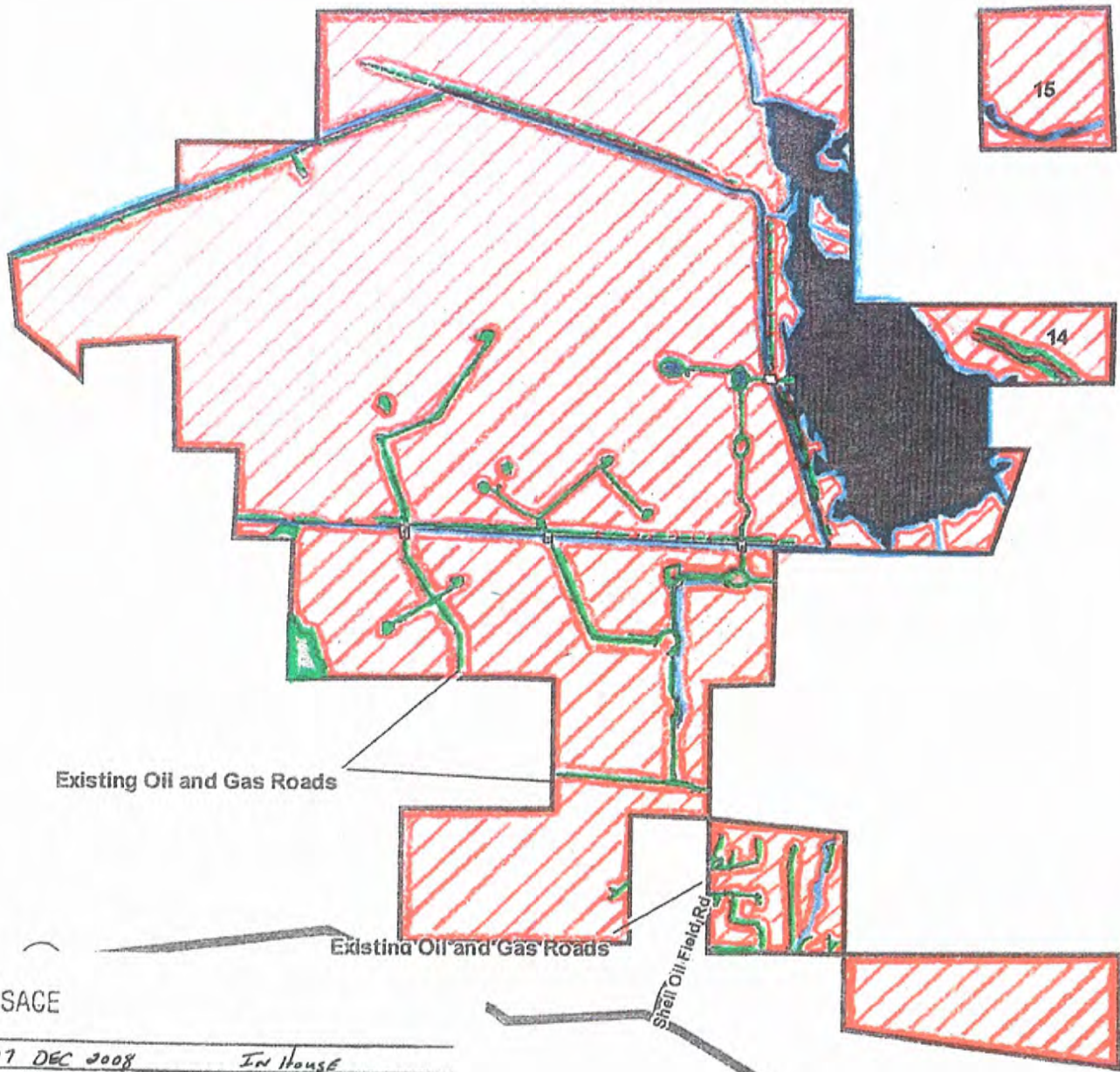
MAP OF LANDS OF
ST.GABRIEL LAND COMPANY, L.L.C.



CHARLES R. ST. ROMAIN
PROFESSIONAL LAND SURVEYOR REG. NO. 4415
6988 ISLAND ROAD, JARREAU, LA.
225-627-4030

Appendix D

JURISDICTIONAL DETERMINATION



USAGE

17 DEC 2008 In House
 BDD 1 of 1
 FOR TURK
 (MUN 2007-02632-SZ)

[Red hatched box] = WETLANDS (404)
 [Green box] = Non-Wetlands
 [Blue box] = WATERS OF US (404)

Legend

- [Black outline] Project Area (5062.30 Acres)
- [Red hatched box] Delineated Wetlands (4538.35 Acres)
- [Green box] NonWetAreas
- [Blue box] Other Waters of the US (446.78 Acres)
- [White box] Existing Bridges

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.



0 3,000 Feet



R.E.S.

Iberville and Ascension Parish, Louisiana

WETLANDS DELINEATION MAP

VICINITY MAP

Created : KLT/ArcView

Approved : KLT

Date : 10/22/2008

Map No. : WD07052301-02

FIGURE 2

Appendix E

MCM CREDIT DETERMINATION

Table 2B: Proposed Restoration/Enhancement Mitigation Worksheet

Mitigation Project Name:

St. Gabriel Birding Center Mitigation Bank

Mitigation Project HUC: 08070202

Mitigation Project Basin: Lake Pontchartrain/Breton Sound/Chandeleur

Impacted HUC: (HUC)

Mitigation Project in the same basin as the impact: Yes

Proximity Factor: 1

Comments:

	Factors	Area 1	Area 2	Area 3	Area 4	Area 5
	Mitigation Type	Re-establishment II	Rehabilitation II	Enhancement II	Rehabilitation II	Enhancement II
Net Improvement	Maintenance/ Management Requirement	Self-Sustaining 3.5	Self-Sustaining 2.5	Self-Sustaining 1	Passive Physical Structures 0.75	Passive Physical Structures 0.3
Negative Influences on the mitigation site	Commercial/Residential Development Oil & gas activities Size Utility Corridors Transportation Corridors	No Impact Slight Impact >500 acres Slight Impact No Impact -0.4	No Impact No Impact >500 acres No Impact No Impact 0	No Impact Slight Impact >500 acres No Impact No Impact -0.2	No Impact Slight Impact >500 acres Slight Impact No Impact -0.4	No Impact Slight Impact >500 acres Slight Impact No Impact -0.4
	Control	Conservation Servitude 0.4	Conservation Servitude 0.4	Conservation Servitude 0.4	Conservation Servitude 0.4	Conservation Servitude 0.4
	Temporal Lag	Over 20 -0.3	10 to 20 -0.2	5 to 10 -0.1	10 to 20 -0.2	5 to 10 -0.1
	Credit Schedule	Schedule 1 0.4	Schedule 1 0.4	Schedule 1 0.4	Schedule 1 0.4	Schedule 1 0.4
	Kind	(Select an Option) 0	(Select an Option) 0	(Select an Option) 0	(Select an Option) 0	(Select an Option) 0
	Location Relative to Impact	(Select an Option) 0	(Select an Option) 0	(Select an Option) 0	(Select an Option) 0	(Select an Option) 0
	Sum of m Factors	3.6	3.1	1.5	0.95	0.6
	Size of Area (Acres)	7	135.4	647.7	174.7	272.9
	$M \times A =$	25.2	419.74	971.55	165.965	163.74
Acreage required for Permittee-responsible Mitigation project using required credits calculated in Adverse impact Worksheet.		0	0	0	0	0
Total Restoration/Enhancement Credits = $\sum (M \times A) =$						1746.195
Total Available including buffers						1920.8
Average Credit Per Acre =						1.6

	Buffers	Non-hydric inclusions	Hydric Inclusions
Credits per acre (M)	0.2	0.4	0.6
Size in Acres (A)	0	25	379.5
$M \times A =$	0	10	227.7
Credits added to bank =			174.6