



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
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4/20/2020

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SUBJECT: MVN 2016-01564-MS

PUBLIC NOTICE

Public Notice Purpose: Pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (30 Stat. 1151; 33 USC 403) and Section 404 of the Clean Water Act (86 Stat. 816; 33 USC 1344), the U.S. Army Corps of Engineers, New Orleans District, Regulatory Branch is soliciting comments from all interested parties on the development, utilization and long-term management of a proposed mitigation bank. The purpose of this mitigation bank is to provide compensatory mitigation for unavoidable impacts to wetland resources, including other waters of the United States, that result from projects authorized through the Department of the Army permit program.

PROPOSED ADDENDUM TO BLOUIN MITIGATION BANK IN LAFOURCHE PARISH

NAME OF APPLICANT: Raceland 330, LLC, c/o Natural Resource Professionals, LLC, 7330 Highland Road, Suite B-1, Baton Rouge, Louisiana 70808

LOCATION OF WORK: This 58.9 acre addendum is situated adjacent to the existing 231.1 acre Blouin Mitigation Bank located in Sections 44, 100, 110 and 113, Township 15 South, Range 17 East, approximately 6 miles west of Raceland, Louisiana. The site is centered on the point 29 45' 46.2" N, -90 41' 38.7" W, located in Hydrologic Unit Code 08090301, as shown in the attached prospectus.

CHARACTER OF WORK: Site restoration shall be accomplished through cessation of agricultural activities, hydrological restoration and afforestation of the native vegetative community. This includes removal of existing berms, filling and regarding on-site ditches and replanting of appropriate species in order to generate wetland credits that could be used as compensation for unavoidable impacts to wetlands associated with Department of the Army (DA) permits authorized under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Additional details of the mitigation plan are included in the attached prospectus.

The Corps of Engineers is soliciting written comments from the public; federal, state, and local agencies and officials; Indian Tribes; and other interested parties. The

comment period will close **30 days** from the date of this public notice advertisement. Written comments, including suggestions for modifications or objections to the proposed work, stating reasons thereof, are being solicited from anyone having interest in this prospectus. Letters must reference the applicant's name and the subject number, be addressed and mailed to the above address,
ATTENTION: REGULATORY BRANCH.

You are requested to communicate the information contained in this notice to any other parties whom you deem likely to have interest in the matter.

Martin S. Mayer
Chief, Regulatory Branch

Enclosure

Prospectus
Blouin Mitigation Bank Addendum

Lafourche Parish, Louisiana

March 26, 2020

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1.0 Introduction

Raceland 330, LLC (Sponsor), submits this Prospectus to the US Army Corps of Engineers, New Orleans District (CEMVN), Louisiana Department of Natural Resources (DNR), and the Interagency Review Team (IRT), to initiate evaluation of the proposed Blouin Mitigation Bank Addendum (Addendum) in accordance with 33 CFR §332.8 (d)(2) and LAC 43:724. The 58.9-acre Addendum will provide compensatory mitigation for unavoidable, permitted impacts to “Waters of the United States” and coastal wetlands if deemed appropriate per 33 CFR §332.3(1) (a) and 33 CFR §332.3 (1) (b) and LAC 43:724. The details pertaining to the use of this site as a mitigation bank will be specified in the subsequent Mitigation Banking Instrument (MBI), which would be modified in accordance with Section XII of the MBI for the Blouin Mitigation Bank, approved on July 22, 2019.

The Blouin Mitigation Bank and the Addendum are located near Lake Boeuf in the Louisiana Coastal Zone. It is located approximately 6 miles upstream of Raceland along Bayou Lafourche in Lafourche Parish, LA. It is within the Louisiana Department of Environmental Quality (DEQ) Barataria River Basin and the United States Geological Survey (USGS) Hydrologic Unit Code #08090301.

The Addendum is made up of two individual areas; a 10.4-acre area (“Area 1”) currently in sugarcane production, and a 48.5-acre area (“Area 2”) that is made up of high-quality cypress swamp and mixed forested wetland habitat. The Sponsor proposes to execute a perpetual conservation servitude, conduct wetland restoration activities, facilitate the establishment of a self-sustaining wetland ecosystem, and provide long-term management in order to maximize the wetland functional capacity of the Addendum.

1.1 Site Location

The Addendum is located at -90° 41’ 38.72” W and 29° 45’ 46.18” N (Approximate Centroid of the Blouin Mitigation Bank) and within Sections 44, 100, 110 and 113, Township 15 South and Range 17 East. The Addendum is located between Thibodaux and Raceland, Louisiana within the Barataria Basin (Figure 1 and 2) The southernmost boundary (Area 1) of the Addendum is located approximately 2,800 feet from Bayou Lafourche and the northernmost boundary (Area 2) is located approximately 12,000 feet from Lake Boeuf.

2.0 Project Goals and Objectives

The goal of the project is to re-establish 10.2 acres of Coastal Bottomland Hardwoods (BLH) and preserve 30.0 acres of Coastal Cypress Swamp (SWP) habitat (Figure 3). Additionally, approximately 12.3-acres of mixed forested habitat shall be incorporated into the Addendum acreage as a buffer/inclusion. Other features within the Addendum will 4.3 acres of Right of Way (ROW)/Offsets, 13.3 acres of preserved wetland buffer, 0.7 acres of preserved upland buffer, 0.2 acres of waterways, and an 0.2-acre access road. When approved/established, the acreage protected under a conservation servitude will increase 25% from 231.1 acres to 290 acres.

In order to improve the aquatic resource area, functions, and values of this BLH and SWP ecosystem, the Sponsor will meet the following objectives.

- Restore and improve historic/natural surface hydrology by removing culverts, plugging/filling/removing ditches, removing/gapping roads/berms, and leveling surface elevations (in addition to work already performed within the Blouin Mitigation Bank),
- Conduct vegetative plantings of BLH species,
- Ensure initial, interim and long-term success through the implementation of a monitoring, management and maintenance program,
- Establish appropriate financial mechanisms to ensure the successful completion of the proposed construction, establishment and long-term management activities, and
- Ensure long-term protection through the execution of a perpetual conservation servitude in accordance with 33 CFR §332.7.

Bottomland Hardwood Forests

As defined by *The Natural Communities of Louisiana* published in 2009 by the Louisiana Department of Wildlife and Fisheries (LDWF) and the Louisiana Natural Heritage program (LNHP), BLH forests are forested, alluvial wetlands occupying broad floodplain areas that flank large river systems. These forests are the predominant natural community type of the Mississippi River Alluvial Plain and are characterized and maintained by a natural hydrologic regime of alternating wet and dry periods generally following seasonal flooding events.

These forests support distinct assemblages of plants and animals associated with particular landforms, hydric soils, and hydrologic regimes. They are important natural communities for maintenance of water quality, providing a very productive habitat for a variety of fish and wildlife species, and are important in regulating flooding and stream recharge. Bottomland hardwoods are extremely productive areas due in part to periodic flood-transported and deposited particulate and dissolved organic matter and nutrients (LNHP 1986-2004). Further, these forests act as buffers for low-elevation urban areas, absorbing and dissipating the physical energy of river systems. The strength of these attributes is influenced by the composition and species density in these forests (DeWeese et al 2007).

Baldcypress Swamp

As defined by *The Natural Communities of Louisiana* published in 2009 by the Louisiana Department of Wildlife and Fisheries (LDWF) and the Louisiana Natural Heritage (LNHP) program, Baldcypress Swamps are forested, alluvial swamps growing on intermittently exposed soils most commonly along rivers and streams but also occurring in backswamp depressions and swales. The soils are inundated or saturated by surface water or groundwater on a nearly permanent basis throughout the growing season except during periods of extreme drought. However, all swamps – even deepwater swamps with almost continuous flooding – experience seasonal fluctuations in water levels.

SWP Forests generally occur on mucks and clays, and also silts and sands with underlying clay layer. They contain relatively low floristic diversity, and associate species may vary widely from site to site.

Undergrowth is often sparse because of low light intensity and long hydroperiods. Swamps tend to be even-aged stands since the environmental conditions favorable for germination and establishment of saplings occur very infrequently. Swamps provide important ecosystem functions including maintenance of water quality, productive habitat for a variety of fish and wildlife species, and regulation of flooding, and stream recharge. Many aquatic food webs depend on the input of allochthonous material in the form of leaf litter or other organic debris that the wetland forest provides. Net primary productivity of swamp forests seems to be increased by periodic flooding or increased water flow and decreased by slow water movement or stagnation.

Wetland Functions and Values

The restored and preserved BLH and SWP will regulate the movement of water within the watershed as well as in the global water cycle (Richardson 1994; Mitsch and Gosselink 1993). Wetlands store precipitation and surface water and then slowly release the water into associated surface water resources, groundwater, and the atmosphere (Taylor et al 1990). Following surface hydrology improvements and the removal of artificial impediments, the Addendum will reflect that of a seasonally saturated/inundated habitat. This will allow chemical functions such as organic compound breakdown, decomposition, nutrient assimilation, oxidation/reduction potential, and denitrification to be more representative of natural wetland habitats.

The planting of BLH species within the Addendum will provide improved habitat, structure, and nesting/breeding grounds for a variety of wildlife species. Following the implementation of the habitat work plan, the BLH habitat, along with existing SWP habitat will be protected under a perpetual conservation servitude. These actions by the Sponsor will allow these functions to be realized over the long term.

The wetland values that will be provided will occur at the following three levels (Mitsch and Gosselink, 2000):

- Population – Animals harvested for pelts and/or food; wildlife observation/recreation; endangered/threatened species habitat
- Ecosystem – Flood mitigation; storm abatement; aquifer recharge, water quality improvement; aesthetics
- Biosphere – Nitrogen cycle; sulfur cycle; carbon cycle; phosphorus cycle

3.0 Ecological Suitability of the Site

The Addendum is ecologically suitable to achieve the goals and objectives of the project. This is concluded from the fact that the Addendum was formed under wetland conditions as evident in hydric soils throughout the site, as mapped by the NRCS and/or verified in the field. The implementation of the mitigation work plan of the Blouin Mitigation Bank and the Addendum will improve sheet flow, retention/detention, and tidal influx within the Addendum. The Addendum is located within the

Barataria Basin, an important watershed in the Louisiana Coastal Zone, where there is an immediate public need for wetland mitigation credits to facilitate the issuance of Section 404/Coastal Use Permits.

3.1 Land Use

3.1.1 Historical Land Use

Louisiana

Native Americans probably first inhabited portions of Louisiana 10,000-12,000 years ago (Kniffen et al. 1987) with the original inhabitants of Lafourche Parish being members of the Chitmach, Washa, and Chawash Native American Tribes (SCS 1984). The natural levee ridges offered the highest and best-drained ground for building homes and fields (McKenzie et al. 1995), and with the abundance of food found along the natural levees and back swamps, populations were strongly concentrated along these waterways (Kniffen and Hilliard 1988).

Europeans came to live in Louisiana in approximately 1700. They used the same Native American water highways and trails along levee ridges, and their towns grew on the sites of or near Native American villages located on the natural levees (McKenzie et al. 1995). Throughout early settlement of Louisiana, land plots were established perpendicular to the shoreline of the River creating “pie shaped” plots. These lots extended back 40 or more arpents (192 feet) onto the heavy clay soils of the poorly drained swamp. Land was cleared, timber was sold, and parallel ditches were then dug the length of the property from levee to back swamp (McKenzie et al. 1995).

Lafourche Parish

Lafourche Parish was founded in 1807 as one of the original nineteen parishes in the state. With fertile land and a navigable bayou, there was little difficulty in attracting settlers who arrived in the 1700's from Germany, France, Spanish, and Acadia (ULL 2017). The soils of Lafourche Parish have always been used for farming even during Native American habitation. Trappers and traders likely came to the region first, but farmers soon followed. Cotton, corn, and sweet potatoes were grown on the natural levees even before 1700 with indigo also being an important crop for a short time. Cotton was the main crop for many years; however, sugarcane increased significantly in 1794 after sugar granulation procedures were successfully developed. By 1861, sugarcane became the principal crop in the Lafourche Parish (SCS 1984).

Blouin Mitigation Bank Addendum

Being relatively close to the natural shoreline of Bayou Lafourche, it is likely that the Addendum served as a source of food and transportation base for Native Americans. After European settlement, evidence of clearing and draining the Addendum for

timber/agriculture is seen in the 1892 USGS Topographic Map (Figure 4). Additionally, the railroad traversing the site is seen at this time.

Figure 5 illustrates the land use of the Addendum in 1940. At this time, evidence of sugarcane/agricultural production is seen in Area 1, and Area 2 area contains forested habitat.

Figure 6 illustrates the land use of the Addendum in 1957. Sugarcane and agriculture are still present within Area 1, and Area 2 contains forested wetlands. The 40/80 Arpent Canal and associated spoil bank are also constructed at this time.

Figure 7 illustrates the land use of the Addendum in 1977. Major changes include the construction of a pipeline ROW within Area 2 with sugarcane/agriculture remaining in Area 1. These conditions have remained the same until present day.

3.1.2 Existing/Current Land Use

General land use within one mile of the Blouin Mitigation Bank and Addendum includes Developed- Agriculture (1,499.1 acres), Developed- Non-Agriculture (317.8 acres), Open Water areas (42.6 acres) and a majority Undeveloped (2,638.0 acres). Developed- Agricultural areas consist mainly of sugarcane, Developed Non-Agricultural areas consist of both commercial and residential areas, Open Water areas include Bayou Lafourche and smaller canals/ditches and undeveloped areas consist mainly of BLH and cypress swamp habitats. Figure 8 illustrates the current land-use within a 1-mile radius of the Blouin Mitigation Bank and Addendum.

3.2 Soils

Soils mapped within the boundary of the proposed Addendum are illustrated in Figure 9 and include Fausse - Schriever association (FA); Cancienne silty clay loam, 0-1 percent slopes (Co); and Cancienne silt loam, 0-1 percent slopes (Cm), according to the Natural Resources Conservation Service (NRCS), Web Soil Survey.

Area 1

The soils within Area 1 (Figure 9) are mapped by the NRCS as the Cancienne Series (Co and Cm). These soils consist of very deep, level to gently undulating, somewhat poorly drained mineral soils that are moderately slowly permeable. These soils formed in loamy and clayey alluvium. They are on high and intermediate positions on natural levees and deltaic fans of the Mississippi River and its distributaries. Slopes range from 0 to 3 percent. The NRCS Web Soil Survey identifies these soils as predominantly non-hydric.

While the Web Soil Survey identifies the Cancienne Series as predominantly non-hydric, within Lafourche Parish – particularly in the lower landscape positions – it is common to observe hydric

soil indicators more consistent with the Schriever Soil Series within the Cancienne Soil Series. Therefore, the Sponsor conducted a wetland delineation within Area 1, collecting data on 6 plots in November and December 2019. The location of the data points is illustrated in Figure 9, and the wetland delineation data is shown in Appendix A. In summary, hydric soil indicators such as were found in all data plots.

Area 2

The Fausse Series (FA) consists of very deep, very poorly drained, very slowly permeable soils that formed in clayey alluvium. These soils are in low, ponded backswamp areas of the lower Mississippi River alluvial plain. Slopes are less than 1 percent (USDA 2013). According to the NRCS Web Soil Survey, the FA soil type is hydric.

3.3 Hydrology

3.3.1 Historical Hydrology and Drainage Patterns

Historical Barataria Basin Hydrology

The Addendum is located along Bayou Lafourche within the Barataria Basin, an inter-distributary estuarine-wetland system located between the natural levees of the active Mississippi River and the abandoned Bayou Lafourche distributary (Conner and Day 1987). The wide natural levees of Bayou Lafourche indicate that the bayou was once a channel of the Mississippi River (SCS 1981). By the early 1800's, Bayou Lafourche was 15-20 feet deep and 200 yards wide and carried roughly 12% of the total Mississippi River Discharge (Lafourche Parish Game and Fish Commission). During this time the Mississippi River and historic Bayou Lafourche would periodically overflow its banks, depositing sediments, nutrients, and freshwater throughout the Barataria Basin, including the lands within the Addendum.

Human induced activities greatly affected the hydrologic regime of the Barataria Basin. Beginning in 1814, Andrew Jackson ordered the obstruction of Bayou Lafourche by cutting shoreline trees in various locations to prevent access by British troops. These obstructions increased siltation and reduced water depths of the Bayou. In 1904, the local levee district constructed an earthen dam across Bayou Lafourche at the Mississippi River in Donaldsonville for flood protection (Lafourche Parish Fish and Game Commission), which was followed by the completion of the modern Mississippi River Levee System in the 1930-1940's (Conner and Day 1987). Following this series of events, sedimentation and riverine flooding within the Barataria Basin was essentially eliminated, with rain, runoff from the Bayou Lafourche shoreline, and tides being the primary sources of water for the Basin and lands within the Addendum.

Figure 10 illustrates the historic/natural Barataria Basin Hydrology within the vicinity of the Addendum.

Historical Addendum Hydrology

The lands within the Addendum were historically hydrologically influenced by riverine flooding and meandering, rainfall, and tides. In addition to the basin-wide hydrology modifications described above, the Addendum also experienced local hydrologic modifications beginning in approximately 1700, when the first European settlers arrived in the Basin, settling along the natural levees of Bayou Lafourche (Conner and Day 1987). At this time, extensive agricultural development began within the Addendum and vicinity which resulted in hydrology impacts such as channelization, reduced retention, and disruption of natural tidal input.

The 1892 Map (Figure 4), although a low-resolution topographic map, shows the Addendum being cleared and developed for agriculture as evident in the ditches/canals dug perpendicular to Bayou Lafourche. This was done to improve drainage from the natural levee of the bayou into the swamps and Lake Boeuf. Although this image was made prior to Bayou Lafourche being severed from the Mississippi River, evidence of roads/levees along Bayou Lafourche are seen which likely eliminated overbank flooding during certain high-water events. The railroad track is also constructed which likely affected natural sheet flow and tidal influx; however, it appears that the ditches/canal had conveyance through the railroad through the primary drainage canal alongside the primary access road.

The 1940 Map (Figure 5) and 1957 Map (Figure 6) show details of the extent of agricultural development within the Addendum and immediate area. Evident in this image are rows, primary drains, and minor cross drains, all designed to facilitate channelized flow to the primary ditch/canal that crosses beneath the railroad and towards the back-swamp and 40/80 Arpent Canal. The 1977 Map (Figure 7) shows details of agricultural drainage improvements that are in place today.

3.3.2 Existing/Current Hydrology and Drainage Patterns

General Area Hydrology

In general, primary hydrologic influences are rainfall runoff and tidal flux. Surrounding hydrologic features include Bayou Lafourche, Grand Bayou, Bayou Boeuf, Bayou Des Allemands, Lake Boeuf, and Lac des Allemands (Figure 12).

Addendum Hydrology – Area 1

Area 1 is currently in agricultural production, portions of which contain agricultural row and drains that are intended to facilitated drainage to two primary canals/ditches on

either side of the access road, which flow north and connect to the 8x8 box culvert and ultimately the 40/80 Arpent Canal, illustrated in Figure 12. The Sponsor evaluated wetland hydrology within 6 data plots during the November/December 2019 wetland delineation. As shown in the attached data sheets (Appendix A), wetland hydrology indicators were observed at all 6 data plots, with primary wetland indicators including Oxidized Rhizospheres in Living Roots (C3), Recent Iron Reduction in Tilled Soils (C6), Presence of Reduced Iron (C4), Surface Water (A1), High Water Table (A2), Saturation (A3), Water Marks (B1), and Iron Deposits (B5).

Addendum Hydrology – Area 2

Area 2 is located on the opposite side of the 40-80 Arpent Canal from the Blouin Mitigation Bank. There is a forested spoil bank along the northern side of the Canal, along with an internal forested spoil bank that traverses through the site. This internal spoil bank somewhat divides Area 2 into two separate hydrologic areas; an impounded/degraded forested wetland ecosystem on the inside, and a very high-quality cypress swamp on the outside of the spoil bank, which represents the proposed preservation area. This area is completely open and contiguous to a 1500-acre cypress swamp which has a direct connection to Lake Boeuf (Figures 12 and 13).

Contributing Watershed

Figure 13 illustrates the contributing watershed for the approved Blouin Mitigation Bank and the Addendum, which is approximately 785.3 acres for Area 1 and the southern/internal portion of Area 2. Excess rainfall runoff drains north away from Bayou Lafourche, under the railroad, and into 40/80 Arpent Canal. Gulf of Mexico tidal flux influences the northern/external portion of Area 2 and surrounding area (2700 sq. miles) via Barataria Bay, Lake Salvador, Lac des Allemands, Lake Boeuf, and 40/80 Arpent Canal.

Elevation and Slope

Using 2018 Light Detection and Ranging Data (LIDAR), Elevations of Area 1 range from the Addendum range from 0.95' to 4.83' NAVD 88 12B (Figure 14). Elevations of Area 2 range from 0.19' to 8.84' NAVD 88 12B. Slopes of the Addendum range from 0 – 1%.

Climate

In Lafourche Parish, summers are hot and humid, and winters are warm and only occasionally interrupted by incursions of cool air from the north. Rains occur throughout the year with an average annual precipitation of 59.35 inches. Of this, 33 inches, or 60 percent usually falls in April through September (SCS 1984).

3.3.3 Jurisdictional Wetlands

A Jurisdictional Determination (JD) for the Addendum and other land areas owned by the Sponsor was issued on May 8, 2017 (MVN-2016-01564-SG). Appendix B contains the JD and Figure 16 illustrates the existing Jurisdictional Wetlands and Waters of the US within the Addendum.

3.4 Vegetation

3.4.1 Historical Plant Community

Historic BLH Communities

According to the Natural Communities of Louisiana (LDWF 2009) the Addendum would likely have consisted of the “Overcup Oak – Water Hickory,” “Hackberry-American Elm-Green Ash” and/or the “Sweetgum-Water Oak” BLH Associations.

The Overcup Oak – Water Hickory association occur in low-lying poorly drained flats, sloughs in the lowest backwater basins, and on low ridges with clay soils that are subject to inundation. Semi-permanently inundated or saturated soils are generally present for major portion of the growing season. Co-dominant species include *Quercus lyrata* (overcup oak) and *Carya aquatica* (water hickory), while associate species include *Fraxinus pennsylvanica* (green ash), *Celtis laevigata* (hackberry), *Cornus foemina* (swamp dogwood), *Forestiera acuminata* (swamp privet), *Planera aquatica* (planertree), *Cephalanthus occidentalis* (buttonbush) and vines. This community type has a long successional stage.

The Hackberry-American Elm-Green Ash association occurs in floodplains of major rivers on low ridges, flats and sloughs in first bottoms. Soils are seasonally inundated or saturated periodically for 1 to 2 months during the growing season. In addition to *Celtis laevigata* (hackberry), *Ulmus americana* (American elm), and *Fraxinus pennsylvanica* (green ash) other species include *Carya aquatica* (water hickory), *Quercus texana* (nuttall oak), *Q. phellos* (willow oak), *Q. nigra* (water oak), *Q. lyrata* (overcup oak), *Liquidambar styraciflua* (sweetgum), *Acer negundo* (box elder), *Ulmus alata* (winged elm), *Acer rubrum* (red maple), *Gleditsia aquatica* (water locust) and *Plantanus occidentalis* (American sycamore). Understory species include *Cornus foemina* (swamp dogwood), *Crataegus* spp. (hawthorn), and *Morus rubra* (red mulberry). Many vines and herbaceous plants are present.

The Sweetgum-Water Oak association occurs in alluvial floodplains, extensively in the Mississippi alluvial valley on well drained first bottom ridges. The community dominants are *Liquidambar styraciflua* (sweetgum) and *Quercus nigra* (water oak). Major

associates are *Celtis laevigata* (hackberry), *Fraxinus pennsylvanica* (green ash), *Ulmus americana* (American elm), and *Q. texana* (Nuttall oak). Associated species are *Acer rubrum* (red maple), *Morus rubra* (red mulberry), *Smilax* spp. (greenbrier), *Sabal minor* (dwarf palmetto), *Ilex decidua* (deciduous holly), *Crataegus viridis* (green hawthorn), *Ampelopsis arborea* (peppervine), *Campsis radicans* (trumpet creeper), and *Toxicodendron radicans* (poison ivy).

Historic SWP Communities

According to the Natural Communities of Louisiana, the historic SWP species present would have included *Taxodium distichum* (baldcypress), *Nyssa aquatica* (tupelo gum), *Nyssa biflora* (swamp blackgum), *Fraxinus pennsylvanica* (green ash), *Acer rubrum* var. *drummondii* (swamp red maple), *Gleditsia aquatica* (water locust), *Cephalanthus occidentalis* (buttonbush), *Fraxinus profunda* (pumpkin ash), *Salix nigra* (black willow), *Planera aquatica* (water elm), and *Itea virginica* (Virginia willow).

3.4.2 Existing Plant Community

Area 1

Area 1 currently consists of *Saccharum* (sugarcane) fields as noted during the November/December 2019 wetland delineation (See Appendix A for data sheets). Portions of Area 1 have been recently rowed/planted, and some that have been chopped and abandoned as part of the sugarcane rotation.

Area 2

Area 2 contains 4 different habitat types, summarized below:

Habitat 1 (30.0 acres) is dominated by baldcypress and tupelo gum in the overstory, with a typical maximum diameter at breast height (DBH) of 24" for the bald cypress. There are several old growth cypress trees in this area. Saplings include cypress and red maple and herbaceous vegetation includes *Cyperus* (flatsedge) and *Cephalanthus occidentalis* (button bush). This habitat type represents the proposed SWP Preservation Area.

Habitat 2 (12.3 Acres) is a degraded swamp contains numerous dead baldcypress trees and any of the living trees consisted primarily of sweetgum and red maple (Average DBH 4-5"). Any living cypress trees had an average DBH of 5". Few living baldcypress saplings are present, in addition to *Serenoa repens* (palmetto), black willow, and *Morella cerifera* (wax myrtle) and *Lygodium japonicum* (Japanese climbing fern). Herbaceous species primarily consists of various sedges.

Habitat 3 (4.0 acres) represents the forested spoil bank that traverses through Area 2. In the higher elevations, upper story species include water oak (average DBH 7”), *Platanus occidentalis* (American sycamore) (maximum DBH 20”), and sweet gum (average DBH 5”). Saplings and shrubs in the higher elevations include water oak, red maple, wax myrtle, and palmetto. As the spoil bank reaches lower elevations, upper story species consist of sweet gum and red maple, and water oak (average DBH 5”). Herbaceous species include *Juncus*, *Scirpus*, *Cyperaceae*, *Pontederia cordata* (pickerelweed), and *Hydrocotyle bonariensis* (pennywort). This habitat type represents the degraded swamp/mixed forested wetland area that will be incorporated as a buffer/inclusion into the Addendum.

Habitat 4 (2.0 acres) represents the maintained herbaceous wetland habitat within the pipeline Right of Way, where the dominant species present includes grasses and sedges. The grass and sedge stratum included *Andropogon glomeratus* (Bushy bluestem), *Panicum hematoma* (Maidencane), *Juncus effuses* (Common Rush) and various *Carex* spp. The dominant herbaceous plants included *Saururus cernuus* (lizard tail), *Commelina communis* (Day flower), and *Persicaria hydropiper* (Marsh peperweed).

Figure 16 illustrates the existing plant communities.

3.5 General Need for the Project in this Area

The Addendum is located in the Deltaic Plain, within HUC #08090301 (Figure 17), which is in the larger Central Louisiana Accounting Unit and Lower Mississippi Subregion (USGS). This area is also referred to as the Barataria Basin.

****Immediate Need for Mitigation Credits***

As of February 1, 2020, the Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS) Website shows that there are only 9.4 acres of Coastal BLH and 9.2 acres of Coastal SWP, both of which are within the Laurel Valley Mitigation Bank Addendum. However, these credits are believed to be reserved; meaning that there are no BLH and SWP credits available for sale currently within the Barataria Basin. As a result, impacts occurring within the Barataria Basin are being mitigated in the Terrebonne Basin which is not preferable according to 33 CFR Parts 332.

Additionally, there are flood protection projects within the Barataria Basin and surrounding watersheds already planned by the USACE-Civil Works Division as well as upcoming pipeline projects that will require large quantities of mitigation within the next 1-2 years. This is in combination with a high demand already being seen within the Barataria Basin due to commercial, residential, and industrial development. Although there are proposed Banks currently within the Barataria Basin, the Addendum Area – particularly the SWP Preservation

Area – can be immediately available upon approval to partially satisfy the public need for mitigation credits and allow these important projects to be approved/constructed.

Need for Wetland Functions and Values

Wetland losses in the northern Gulf Coast Region of the United States are so extensive that they represent critical concerns to government environmental agencies and natural resource managers. In Louisiana, almost 1,158 square miles of low-lying wetlands converted to open water between 1956 and 2004 (USGS 2013), and the Barataria – Terrebonne Estuary is experiencing between 50 and 61 percent of the land loss for the entire state (BTNEP). Within the Barataria Basin alone, wetland losses averaged nearly 5,700 acres per year between 1974 and 1990 (lacoast.gov).

Wetland loss within the Barataria Basin is attributed to the combination of natural erosional processes of sea-level rise, subsidence, wind, tides, currents, and herbivory, and the human activities of channelization, levee construction, and development, which is significant in Coastal Louisiana. In 2006, over 2 million residents lived in Louisiana Coastal Parishes (US Census Bureau 2007). Among the 50 states, Louisiana ranks 1st and 2nd in crude oil and natural gas production (including Outer Continental Shelf Production), respectively (LDNR 2007). In 2005, Louisiana's coastal wetlands provided storm protection for ports that carried 457 million tons of waterborne commerce. Five of the top fifteen largest ports in the US are in Louisiana (USACE 2007). In 2006, Louisiana's Commercial Fishing accounted for 21% of the total catch by weight in the lower 48 states (USDOC 2007), and annual expenditures from recreational fishing can amount up to \$1.2 Billion (Gentner et al. 2007).

Bottomland hardwood forests were once a prominent feature of the southeastern United States landscape at the time of European settlement (Allen 1997). These forests extended along nearly the entire lower Mississippi River alluvial valley (LMRAV). During the last century, approximately 24 million acres of bottomland hardwoods were reduced to approximately 5 million acres (MacDonald et al. 1979). The primary cause of this loss is contributed to agriculture. Based on historical records and aerial photography, agricultural activities were the primary cause of the loss and degradation of bottomland hardwoods within the Addendum.

Swamp forests represent a unique and important ecosystem in the southeastern United States, with bald cypress being the dominant tree in the coastal plain of Louisiana when settlers first arrived in the state. Early estimates of the area of bald cypress forests range from 0.67-3.64 million ha, but following intensive timber harvesting activities from 1890-1925, this number was reduced drastically to only 0.14 million ha. In addition to timber harvesting, other causes of decline include hydrology modifications, invasive species, and natural subsidence (Conner and Toliver 1990).

In order to reverse the historic and current trends of wetland loss within Louisiana and the Terrebonne River Basin, wetland restoration, enhancement, and preservation projects - such as

the proposed Addendum -must be conducted, maintained, and managed for the long term. However, to support the socioeconomic values that exist due to the presence of these wetlands, a sustainable approach to land use must also take place. The following organizations have formed to develop plans to address the needs of the watershed:

- ***Lafourche Parish Coastal Zone Management*** – Lafourche Parish has developed a coastal zone management division which recognizes the “value in natural coastal ecosystems and coastal-dependent commercial activity,” and seeks to “balance these values in Lafourche Parish to allow current and future residents the opportunity to enjoy the multiple benefits and cultural values associated with a healthy coastal zone,” which will “foster the public safety, health, and welfare of Lafourche Parish residents” (Lafourche Parish Government 2017).
- ***Barataria-Terrebonne National Estuary Program (BTNEP)*** – Some of the goals of the BTNEP include: preserving and restoring wetlands and barrier islands, promoting environmentally responsible economic activities that sustain estuarine resources, realistically supporting diverse, natural biological communities, and developing and maintaining comprehensive watershed planning.

Perhaps the most important programs to ensure a sustainable approach to land-use in the Terrebonne Basin are the Section 404 and Coastal-Use Permitting Programs. As unavoidable impacts to wetlands are authorized in order to satisfy the public need of a particular project, compensatory mitigation must be secured prior to the impact occurring. The Addendum will provide this mitigation, in effect allowing the benefit of the project to be realized while at the same time meeting the public need of restoring, enhancing and preserving BLH and SWP. This will certainly expand on the efforts of the Lafourche Parish Coastal Zone Management Division and the BTNEP.

The Addendum will address the needs of the watershed by contributing to the economy of Louisiana by facilitating the issuance of Section 404 and Coastal-Use Permits. It will also contribute to the environment of Louisiana by providing a variety of biotic and physical functions to the watershed.

4.0 Establishment of the Mitigation Bank Addendum

4.1 Site Restoration Plan

4.1.1 Soils and Hydrology Work Plan

The Soils and Hydrology Work Plan (Figures 18-19, Appendix C) involves utilizing heavy machinery (i.e. bull dozers, tracked excavators, dump trucks) to remove agricultural

rows, drainage canals/ditches, and to remove elevated roads/berms. Work will take place within Area 1, summarized below:

- Culverts/Pipes-the Sponsor will remove 2 existing culverts that are located on the southern boundary of Area 1.
- Ditches-ditches will be filled/reshaped, resulting in broader, more gradual swales that will be planted in vegetation
- Berms-berms will be lowered and filled into adjacent ditches
- Primary Access Road-the primary access road will be degraded to allow for sheet flow. The material will be deposited into adjacent drainage ditches or disposed in the approved non-wetland/non-coastal location currently.

Following the implementation of the Soils and Hydrology Work Plan sheet flow and tidal influx will be improved and will reflect that of a natural wetland system (Figures 20-21. Work has already been/is being conducted within the approved Blouin Mitigation Bank, therefore the work proposed in the Addendum will further increase the hydrologic function of both project areas.

4.1.2 Habitat Work Plan

The Habitat Work Plan (Figure 22) consists of site preparation and vegetative plantings within Area 1 which will be planted with a Sugarberry-American Elm-Green Ash BLH type, shown in Table 1 below:

Table 1 – BLH Plantings in Area 1 (10.2 acres)

BOTTOMLAND HARDWOOD SPECIES	SOFTMAST	HARDMAST	COMPOSITION	TREES PER ACRE	TOTAL TREES PLANTED
Nuttall Oak (<i>Quercus nuttallii</i>)		X	30%	161	1642
Willow Oak (<i>Quercus phellos</i>)		X	25%	135	1377
Water Oak (<i>Quercus nigra</i>)		X	5%	27	275
American Elm (<i>Ulmus americana</i>)	X		10%	54	551
Sugarberry (<i>Celtis laevigata</i>)	X		10%	54	551
Green Ash (<i>Fraxinus pennsylvanica</i>)	X		10%	54	551
Sweetgum (<i>Liquidambar styraciflua</i>)	X		10%	54	551

Planting will take place in late winter/early spring 2021. In the preceding summer/fall (2020) the Sponsor will “bush hog” the fields and chop/disk where needed to obtain a level surface. The Sponsor will also rip portions of Area 1, if necessary, to facilitate root growth preferably while the soil is dry and long enough before planting to ensure soil settling. Plantings will then take place with the proposed species, densities and percentages in coordination with the USACE, DNR, and IRT. A pre-emergent herbicide (Oust) will be applied shortly before or immediately after planting following a rain event and before the first buds appear on the trees.

4.2 Technical Feasibility

The activities proposed to restore the wetlands within the Addendum are routine in nature and represent well established techniques that have resulted in successful mitigation projects in other areas of Louisiana. The removal of agricultural drainage features will increase retention time and improve natural sheet flow while the removal of artificial impediments will eliminate impoundments and facilitate tidal influx. Existing site condition indicate favorable conditions for BLH Plantings. In combination with the hydric soils and the Addendum’s location within the Barataria Basin, the proposed surface hydrology improvements, vegetative plantings, along with proper management will facilitate the establishment of a self-sustaining BLH and SWP ecosystem that partially satisfy the public need for mitigation credits.

4.3 Current Site Risks/Encumbrances

There are known rights of way/servitudes within Area 2; however, these propose little-to-no risk to the functionality of the Addendum. These are illustrated in Figure 23 and summarized below:

- Texas Eastern Transmission, LP; Natural Gas Pipeline (65-feet) – This ROW encompasses 2.0 acres within Area and is represented by herbaceous wetland habitat. The Sponsor proposes that this area will be a “less and except” of the conservation servitude for the property.
- 40-80 Arpent Canal (75-feet) – Lafourche Parish has a right to maintain the drainage functionality of the 40-80 Arpent Canal. While there is no official servitude over the existing spoil bank along the north bank of this canal, the Sponsor will not account for this area as credit/buffer to accommodate any future potential activities associated with the canal. However, the Sponsor proposes that this area be included within the conservation servitude.

4.4 Long-Term Sustainability of the Site

The Addendum will be sustainable for the long-term and will maintain wetland hydrology due to hydrology influences from the Gulf of Mexico and its position in the landscape. The soils are suitable for the establishment of BLH and SWP species and through active and adaptive management techniques and appropriate monitoring activities, the habitat should develop into a self-sustaining ecosystem. Additionally, the Sponsor is the landowner of the Addendum and will have full authority to monitor and maintain the Addendum for the long term.

5.0 Proposed Service Area

The Sponsor proposes to use the Barataria River Basin (HUC #08090301) as the primary service area and the Terrebonne River Basin (HUC #08090302 and #08070300) as the secondary service area (Figure 17). As impacts to SWP and BLH occur within this area, securing credits from the Addendum will result in a no-net loss of wetland/aquatic resources within the Barataria River Basin. Use beyond these service areas/habitat types will be determined by CEMVN and DNR on a case-by-case basis.

6.0 Mitigation Credit Potential

In order to maximize the availability of credits to address the shortage in the Barataria River Basin, the Sponsor proposes to incorporate the addendum credit potential into the overall credit potential for the approved Blouin Mitigation Bank in the following manner:

Bottomland Hardwood Credits

- The approved Blouin Mitigation Bank has 42.7 acres of BLH Re-establishment, Rehabilitation, and Preservation, for a weighted Louisiana Rapid Assessment Method (LRAM) value of 4.2 LRAM Credits/Acre. The 30% Administrative Credit Release and 100% Preservation Release totaled 22.5 acres, or 94.5 LRAM Credits.
- By adding 10.2 acres of BLH Re-establishment, this would increase the total BLH mitigation potential to 52.9 acres and increase the weighted LRAM value of 4.5 LRAM Credits/Acre. Applying this per-acre value to the already released acres (22.5 acres) would result in 101.3 LRAM credits.
- Subtracting 94.5 LRAM credits from 101.3 LRAM credits would result in +6.8 LRAM credits that would need to be accounted for. This can be accomplished by dividing +6.8 LRAM credits by the new per-acre value (4.5), which results in +1.5 acres.
- Therefore, upon approval of the Addendum and completing the necessary administrative steps, 1.5 acres would need to be added to the ledger to account for a shortage of the Administrative and Preservation Release for the BLH credits in the approved Blouin Mitigation Bank, along with the 30% Administrative Release for the BLH credits in the Addendum.
- The remaining initial, interim and long-term credit releases would be combined, and follow the typical credit release progression. This will be easy to track, as the "As-Built Reports" for the Blouin Mitigation Bank and the Addendum will be submitted at the same time in Spring 2021.

Cypress Swamp Credits

- The approved Blouin Mitigation Bank has 166.9 acres of SWP Re-establishment, Rehabilitation, Enhancement, and Preservation, for a weighted LRAM value of 4.1 LRAM Credits/Acre. The 30% Administrative Credit Release and 100% Preservation Release totaled 55.9 acres, or 229.2 LRAM Credits.
- By adding 30.0 acres of SWP Preservation, while increasing the total SWP mitigation potential to 197.4 acres, this will decrease the weighted LRAM value to 3.5 Credits/Acre. Applying this per-acre value to the already released acres (55.9 acres) would result in 195.7 LRAM credits.

- Subtracting 229.2 LRAM credits from 195.7 LRAM credits would result in -33.54 LRAM credits that would need to be accounted for. This can be accomplished by dividing -33.54 LRAM credits by the new per-acre value (3.5), which results in -9.6 acres.
- Therefore, upon approval of the Addendum and completing the necessary administrative steps, 9.6 acres would be deducted from the 30.0 acres of SWP Preservation, which would result in a 100% Preservation Credit Release of 20.4 acres.
- The remaining initial, interim, and long-term credit releases would not be changed and would follow the credit release progression for the approved Blouin Mitigation Bank.

Appendix D contains LRAM spreadsheets of the approved Blouin Mitigation Bank as well as the proposed LRAM spreadsheet by incorporating the Addendum.

7.0 Operation of the Mitigation Bank Addendum

7.1 Project Representatives

Sponsor/Landowner

Raceland 330, LLC
C/O Mike Bernard
PO Box 25
Des Allemandes, LA 70030
225.450.5921

Agent:

Natural Resource Professionals, LLC
C/O Gregg Fell, Senior Technical and Regulatory Analyst
7330 Highland Road, Suite B-1
Baton Rouge, Louisiana 70808
gfell@nrpllc.com
225.928.5333

7.2 Qualifications of the Sponsor

Raceland, 330, LLC is owned and operated by Mr. Kelly Candies and Mr. Michael D. Bernard, who have successfully established and operated the approved Blouin Mitigation Bank.

Mr. Candies currently manages over 18,000 acres of land owned by Otto Candies, LLC. Mr. Candies has been in the land management business for over 20 years, has been involved with mitigation issues involving land owned by Otto Candies, LLC, and is fully qualified to perform the duties of a sponsor and mitigation bank owner.

Mr. Bernard has sponsored 2 other mitigation banks during the past several years, including the Upper Bayou Folsé Mitigation Bank and the Laurel Oak Bottomland Hardwood Ecosystem Mitigation Bank. Mr. Bernard is a retired Professional Land Surveyor and has been in the land business for over 30 years and is fully aware of the responsibilities associated with being the owner and sponsor of the Addendum.

7.3 Proposed Long-Term Ownership and Management Representatives

Raceland 330, LLC will serve as the Sponsor and Owner of the Addendum but will reserve the option of appointing a long-term steward which must be approved by the USACE, DNR, and IRT. The Sponsor anticipates that the long-term management requirements will be boundary control, trash/debris cleanup, invasive species control, general maintenance, and monitoring.

7.4 Site Protection

The Addendum will be protected in perpetuity by a conservation servitude pursuant to Louisiana Revised Statute 9:1271 *et seq.* The servitude will be held by Mississippi River Trust, a conservation-oriented 501(c) (3) organization. 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. Figure 24 illustrates the land areas (56.9 acres) that will be protected by the Conservation Servitude.

7.5 Construction and Establishment Financial Assurances

Upon approval of the Addendum, the Sponsor will establish a Construction and Establishment Financial Assurance (CE Fund), which will be in the form of an escrow account and/or a letter of credit. The CE fund will be held by an entity accredited by the Federal Deposit Insurance Corporation (FDIC), and the beginning balance of the CE Fund will be coordinated with the USACE, DNR, and IRT to account for construction costs, maintenance costs, monitoring, and bank management during the construction and establishment period. The CE Fund will be reduced as success criteria are achieved and the probability decreases that those funds would be needed.

7.6 Long-Term Strategy

The Sponsor will provide long-term management of the Addendum in accordance with 33 CFR §332.7. The Sponsor will provide site protection by establishing conservation servitude over the Addendum, which will be held by a third-party non-profit corporation. Following the establishment period, the Addendum would only require long term management activities such as invasive species control, boundary maintenance, and general site inspections. However, the Sponsor - through coordination with the USACE, DNR, and the IRT - will employ an Adaptive Management Plan if monitoring or other information indicates that the Addendum is not progressing towards meeting its anticipated performance standards. The Sponsor will also establish a long-term management fund/long term escrow account which will be funded annually/incrementally as credit sales are made to ensure that monies are available to perform any anticipated management and maintenance needs.

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Figures



Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

VICINITY MAP

LAFOURCHE PARISH, LA

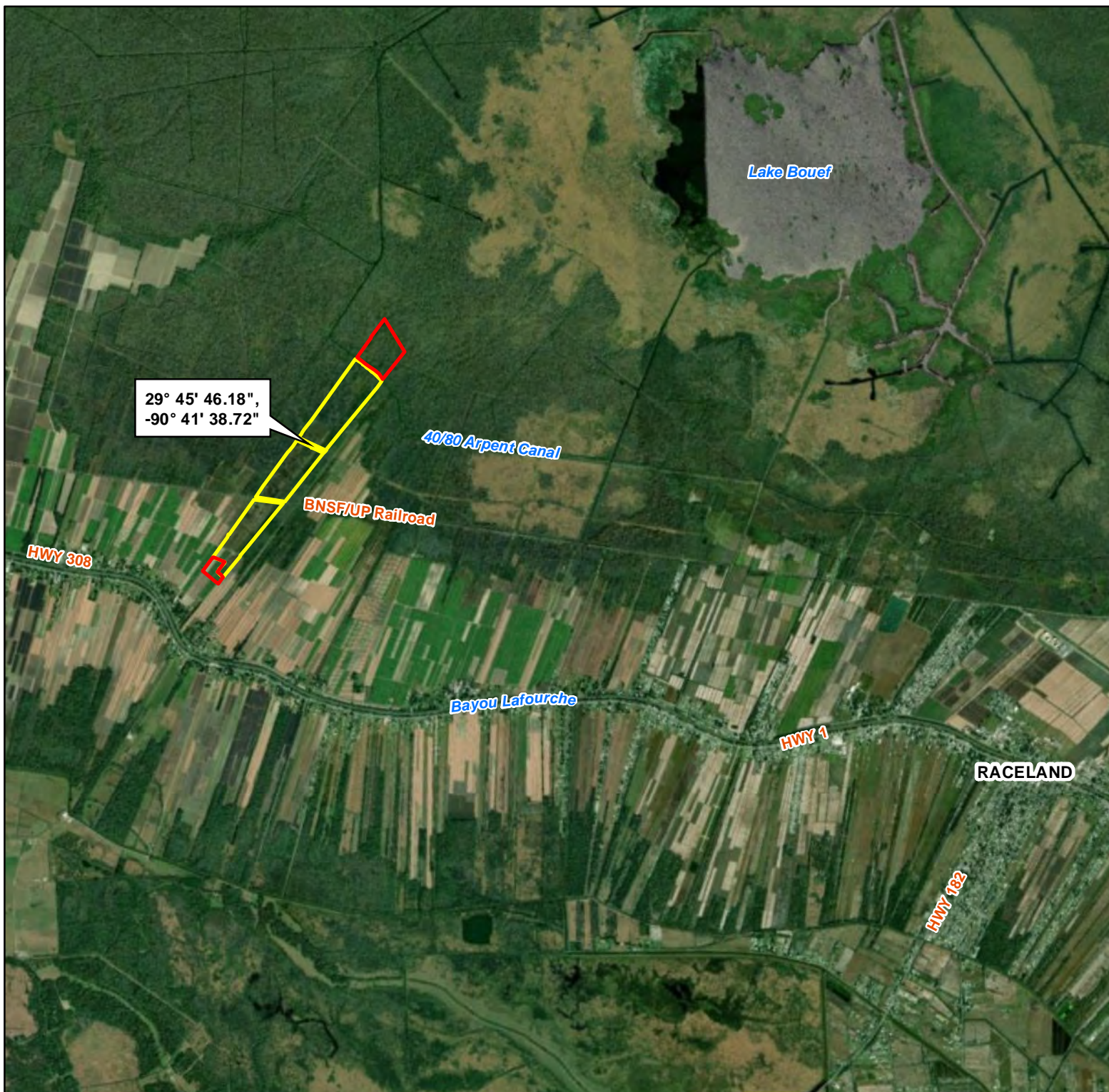
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Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 1



Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)

1.0 0.5 0 1.0 Miles

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. Imagery sourced from April 2016 GoogleEarth
4. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

AERIAL LOCATION MAP

LAFOURCHE PARISH, LA

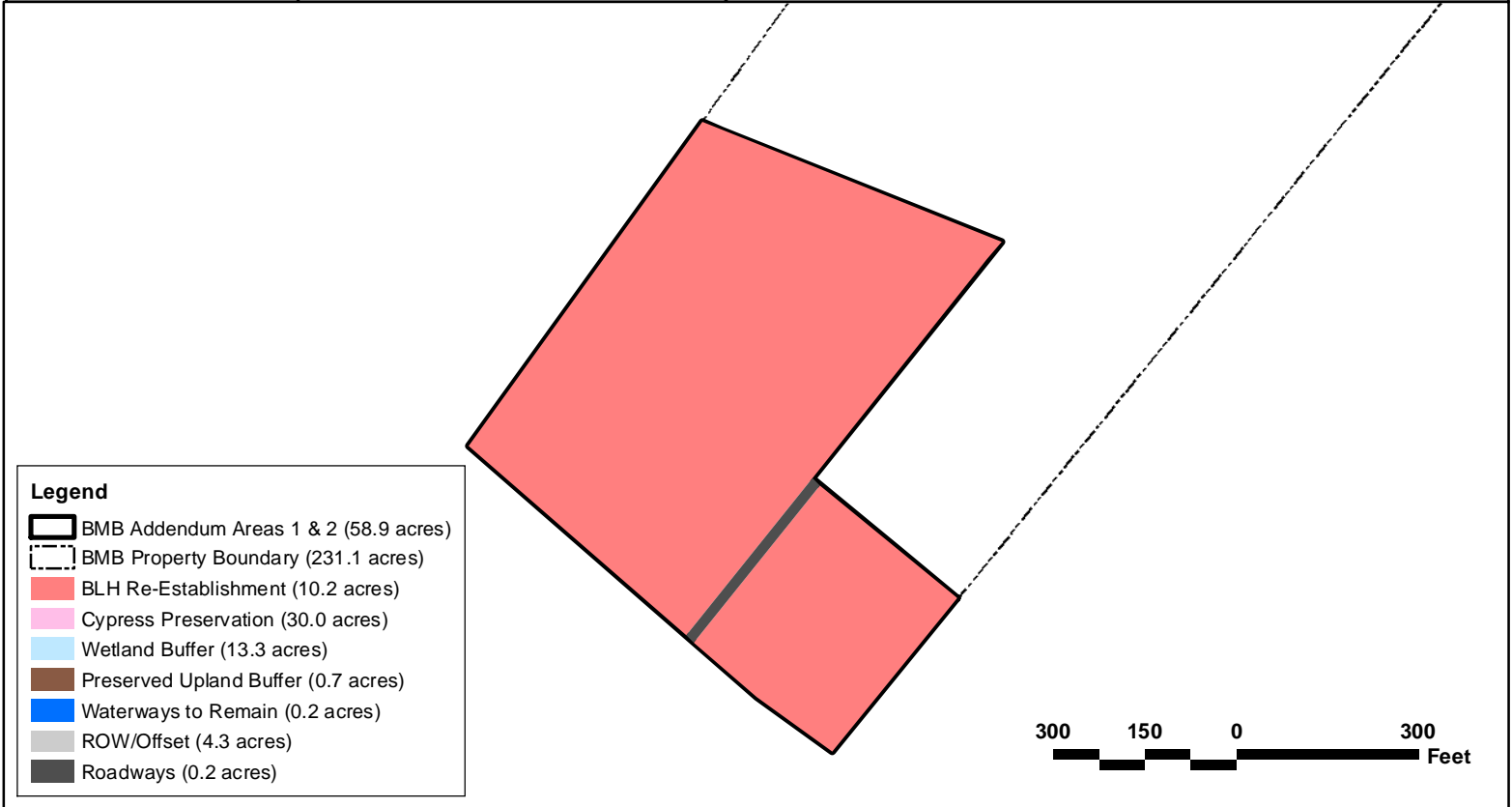
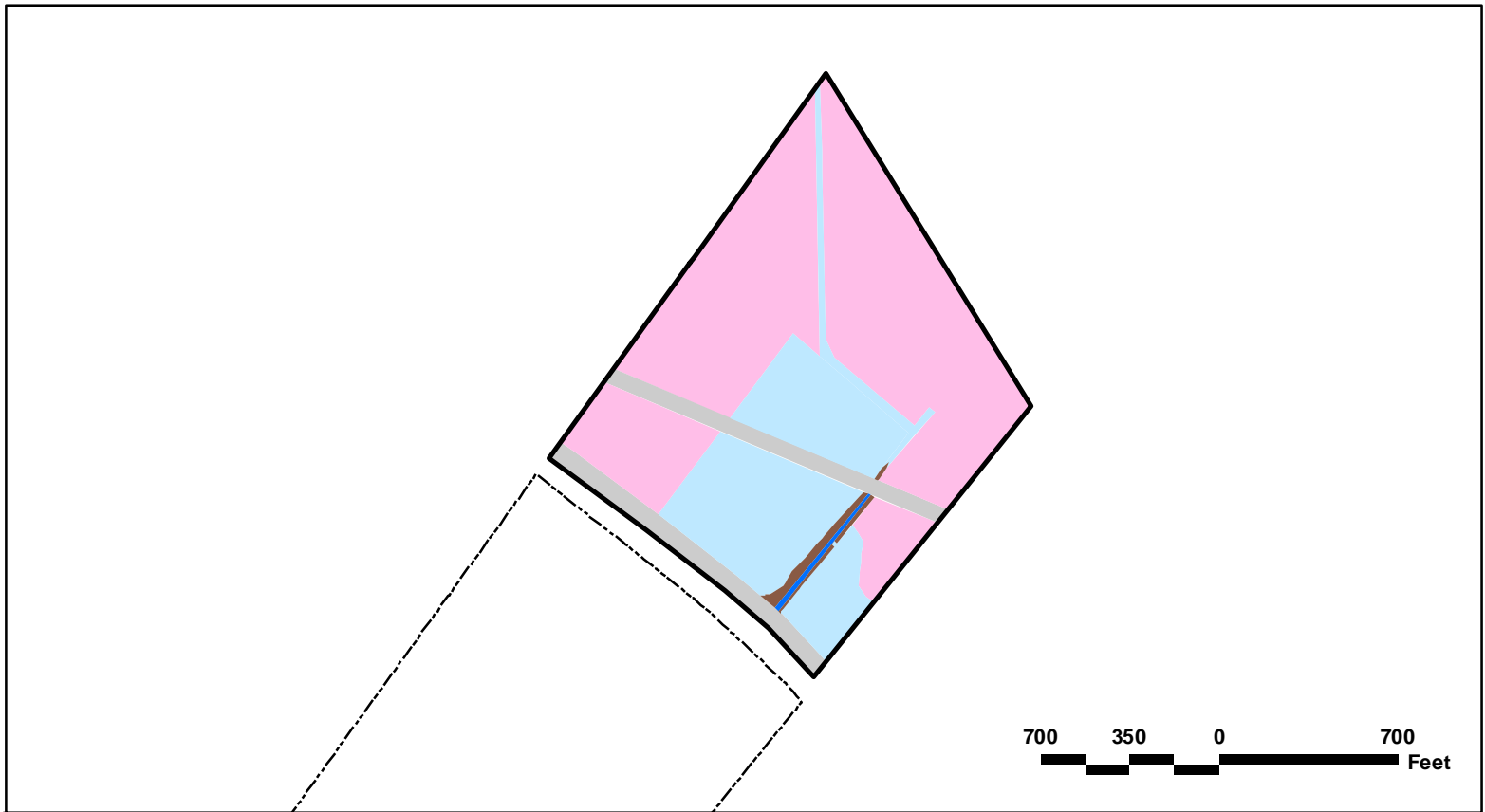
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Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE 2



Legend

- BMB Addendum Areas 1 & 2 (58.9 acres)
- BMB Property Boundary (231.1 acres)
- BLH Re-Establishment (10.2 acres)
- Cypress Preservation (30.0 acres)
- Wetland Buffer (13.3 acres)
- Preserved Upland Buffer (0.7 acres)
- Waterways to Remain (0.2 acres)
- ROW/Offset (4.3 acres)
- Roadways (0.2 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

MITIGATION FEATURES

LAFOURCHE PARISH, LA

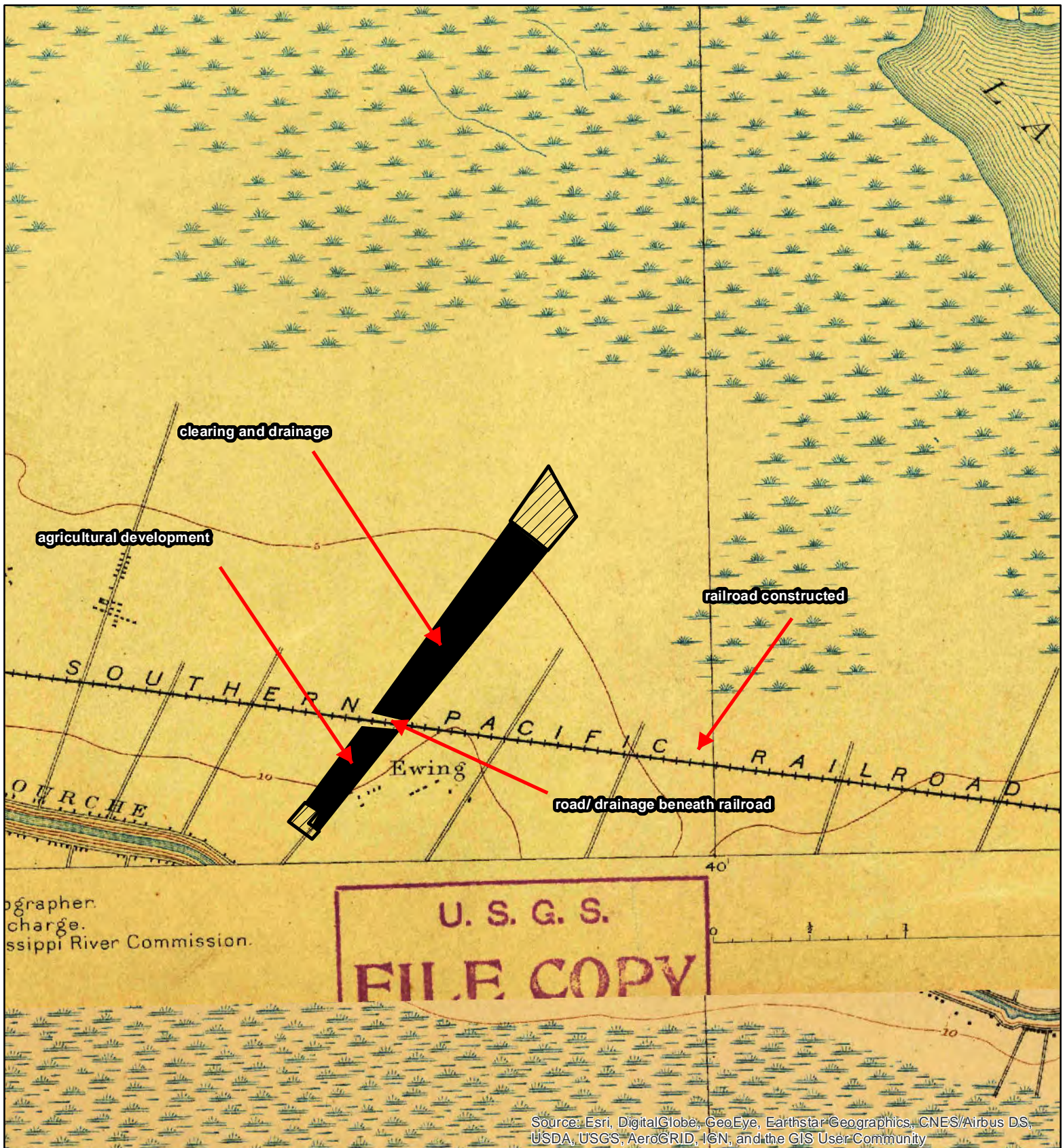
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 3



Legend

- BMB Property Boundary (231.1 acres)
- BMB Addendum Boundary (58.9 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. Topographic map from historic USGS maps

1.0 0.5 0 1.0 Miles



Raceland 330, LLC

Des Allemands, LA

1892 MAP

LAFORCHE PARISH, LA

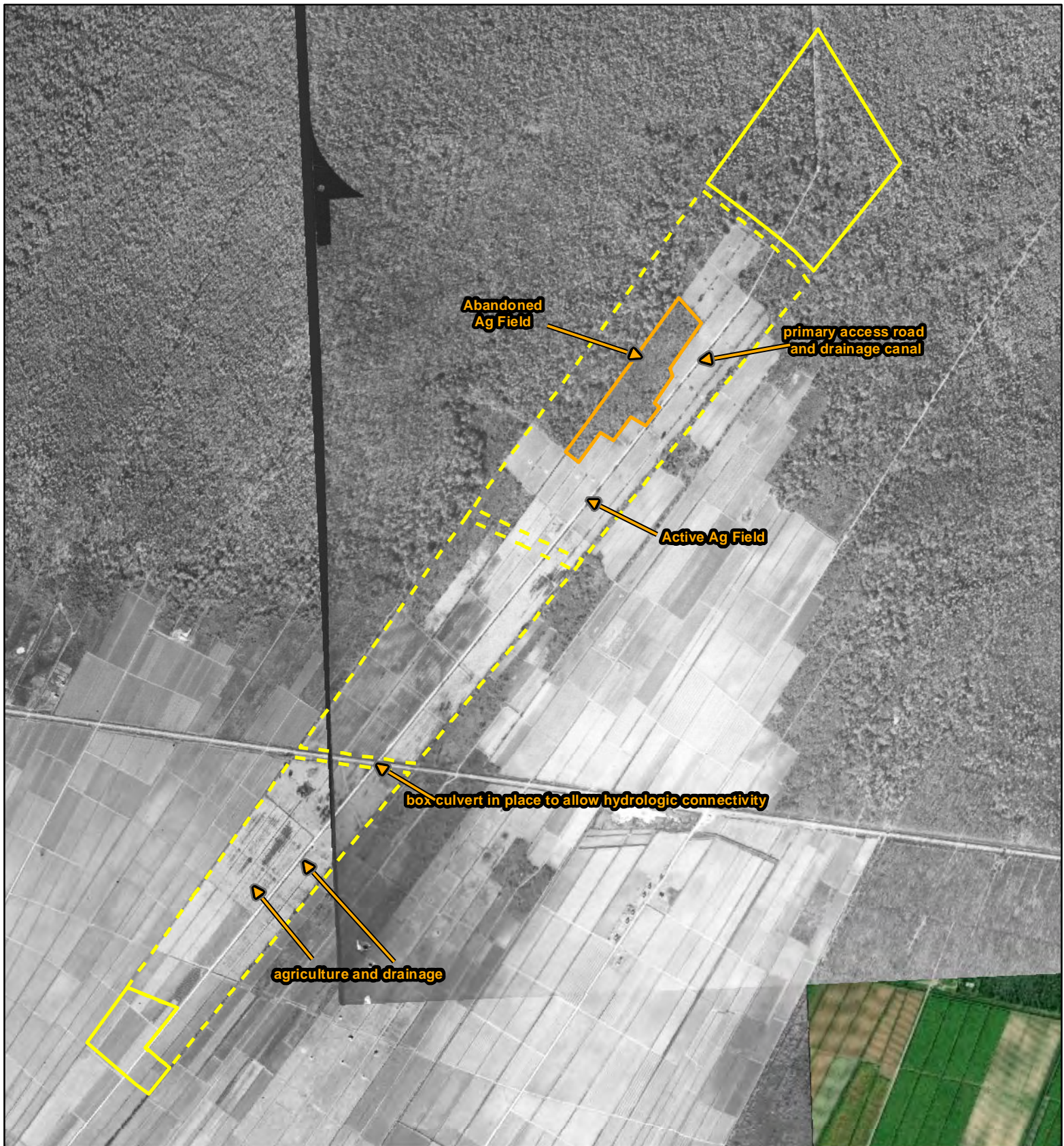
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 4



Legend

- BMB Addendum Boundary (58.9 acres)
- BMB Property Boundary (231.1 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. Historic Imagery from Louisiana State University Cartographic Information Center

1,250 625 0 1,250 Feet



Raceland 330, LLC

Des Allemands, LA

1940 MAP

LAFOURCHE PARISH, LA

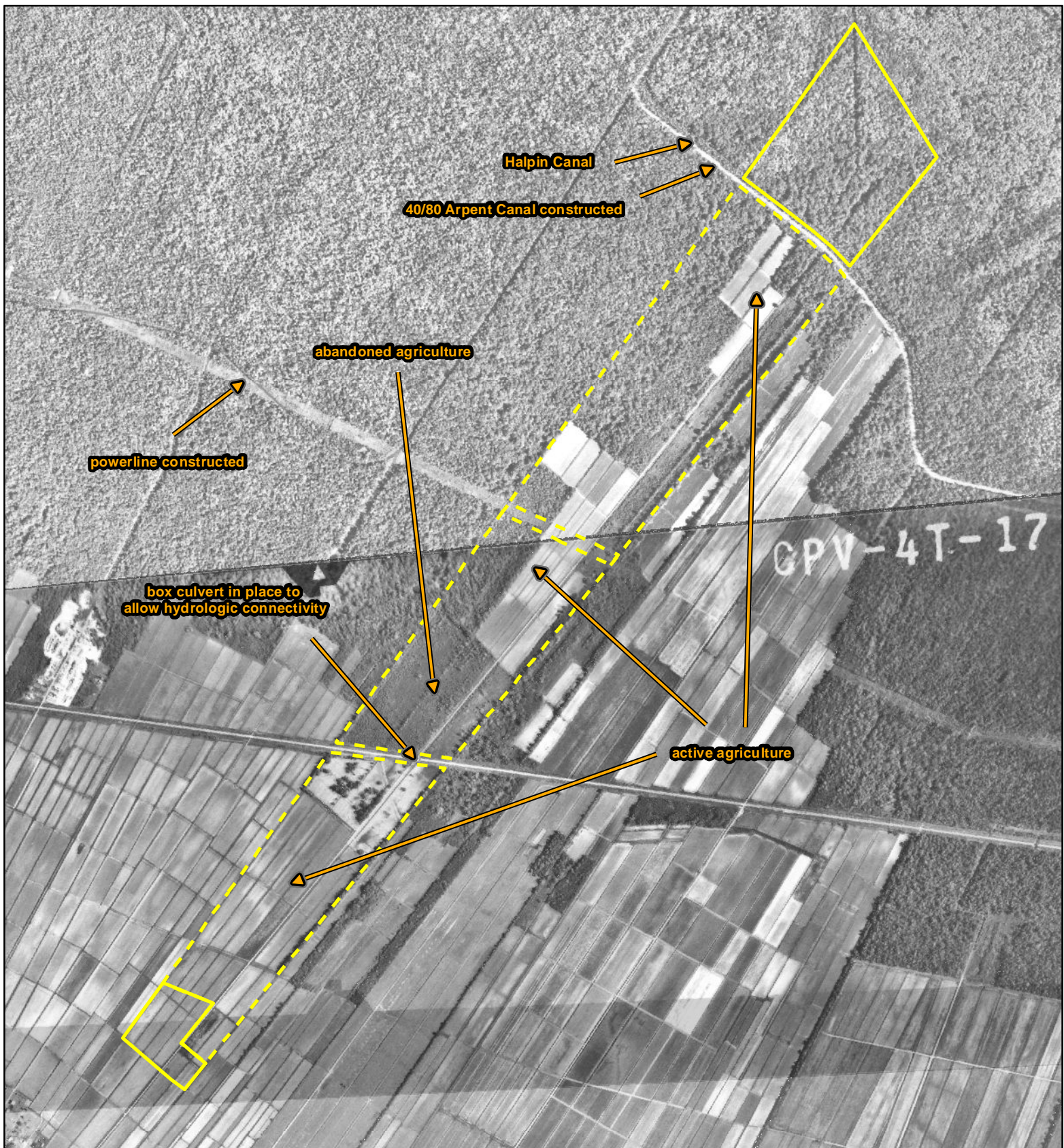
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Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 5



Legend

- BMB Property Boundary (231.1 acres)
- BMB Addendum Boundary (58.9 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. Historic Imagery from Louisiana State University Cartographic Information Center

1,250 625 0 1,250 Feet



Raceland 330, LLC

Des Allemands, LA

1957 AERIAL MAP

LAFOURCHE PARISH, LA

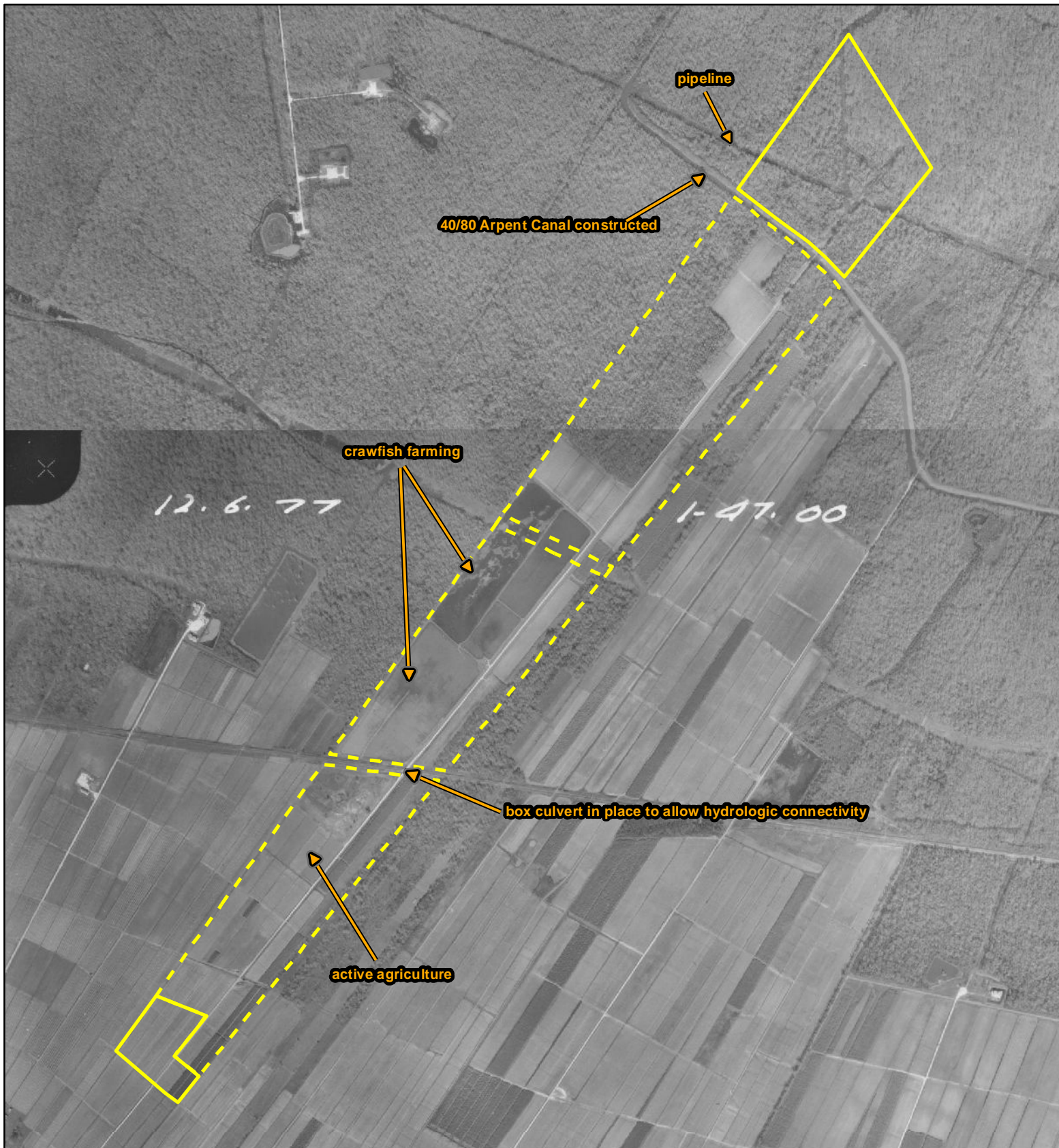
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 6



Legend

- BMB Property Boundary (231.1 acres)
- BMB Addendum Boundary (58.9 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. Historic imagery from Louisiana State University Cartographic Information Center

1,250 625 0 1,250 Feet



Raceland 330, LLC

Des Allemands, LA

1977 AERIAL MAP

LAFOURCHE PARISH, LA

Created : AGB/ArcView






Approved : GLF

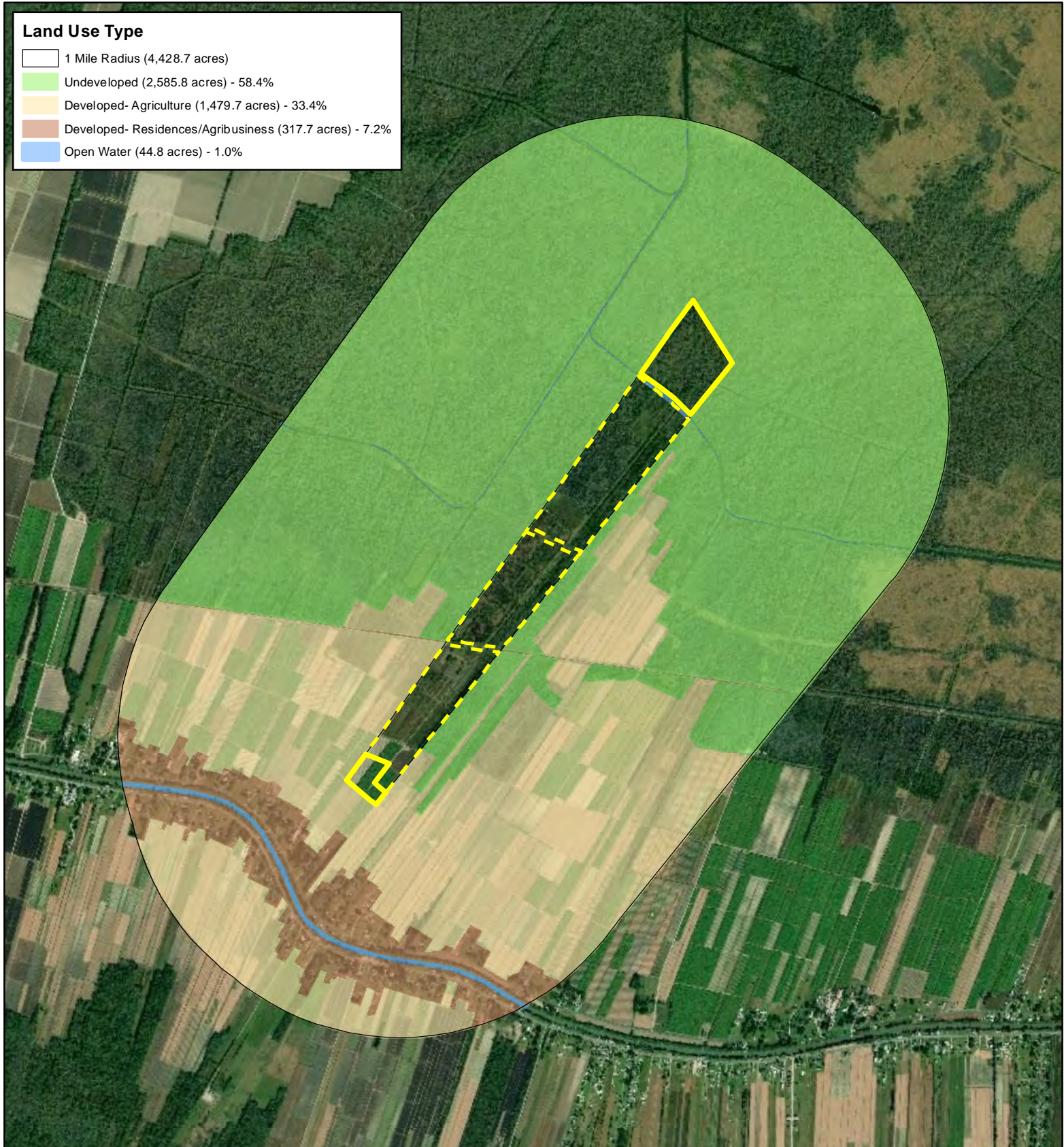
Date : 03/24/2020

Map No. :



FIGURE 7

Land Use Type

	1 Mile Radius (4,428.7 acres)
	Undeveloped (2,585.8 acres) - 58.4%
	Developed- Agriculture (1,479.7 acres) - 33.4%
	Developed- Residences/Agribusiness (317.7 acres) - 7.2%
	Open Water (44.8 acres) - 1.0%



Legend

-  BMB Property Boundary (231.1 acres)
-  BMB Addendum Boundary (58.9 acres)

Map Notes:

- The boundary shown is based on the boundary survey provided by the client.
- Map projected to NAD83 UTM Zone 15.

0.5 0.25 0 0.5 Miles



Raceland 330, LLC

Des Allemands, LA

ADJACENT LAND USE MAP

LAFOURCHE PARISH, LA

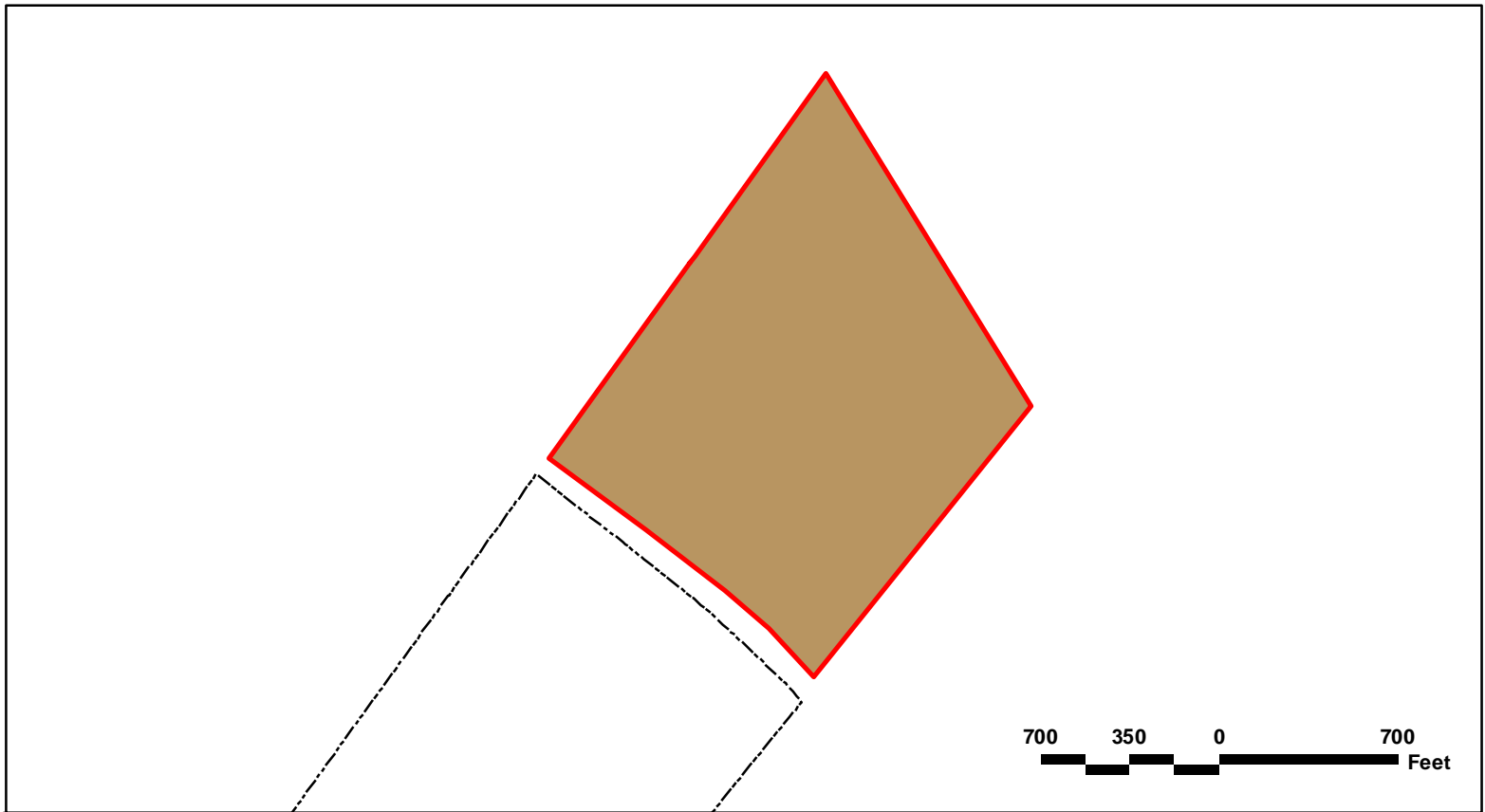
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 8



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank

Raceland 330, LLC	
Des Allemands, LA	
SOIL MAP	
LAFOURCHE PARISH, LA	
Created :	AGB/ArcView
Approved :	GLF
Date :	03/24/2020
Map No. :	
FIGURE 9	





Lafourche Parish

Miles

Legend

BMB Property Boundary (231.1 acres)

BMB Addendum Boundary (58.9 acres)

Flow Type

Channelized

Overbank River Flooding

Tidal Flux

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

HISTORIC HYDROLOGY

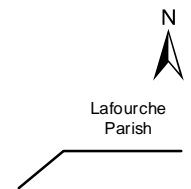
LAFOURCHE PARISH, LA

Created: AGB/ArcView

Approved: GLF

Date: 03/24/2020

FIGURE 10

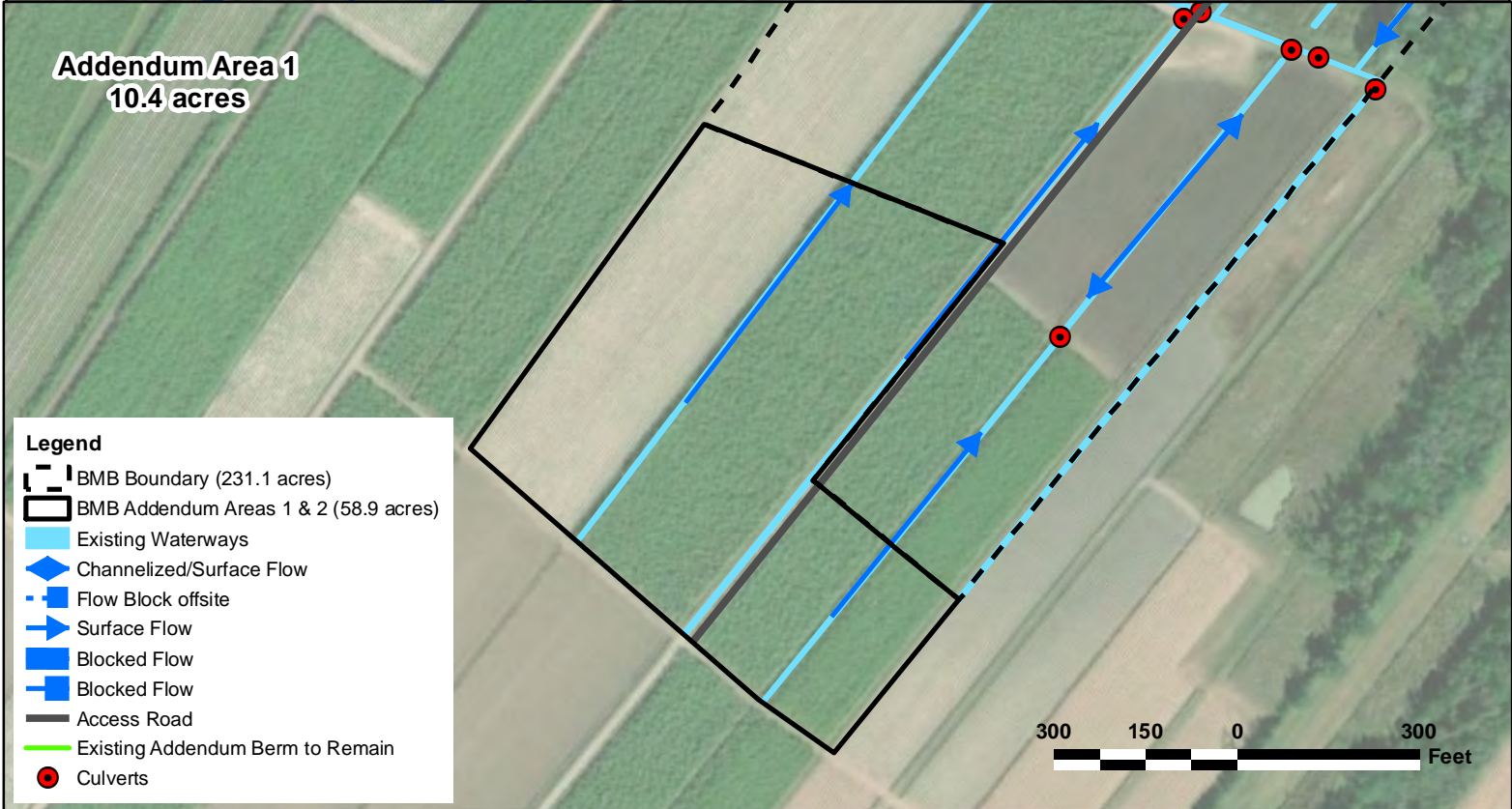
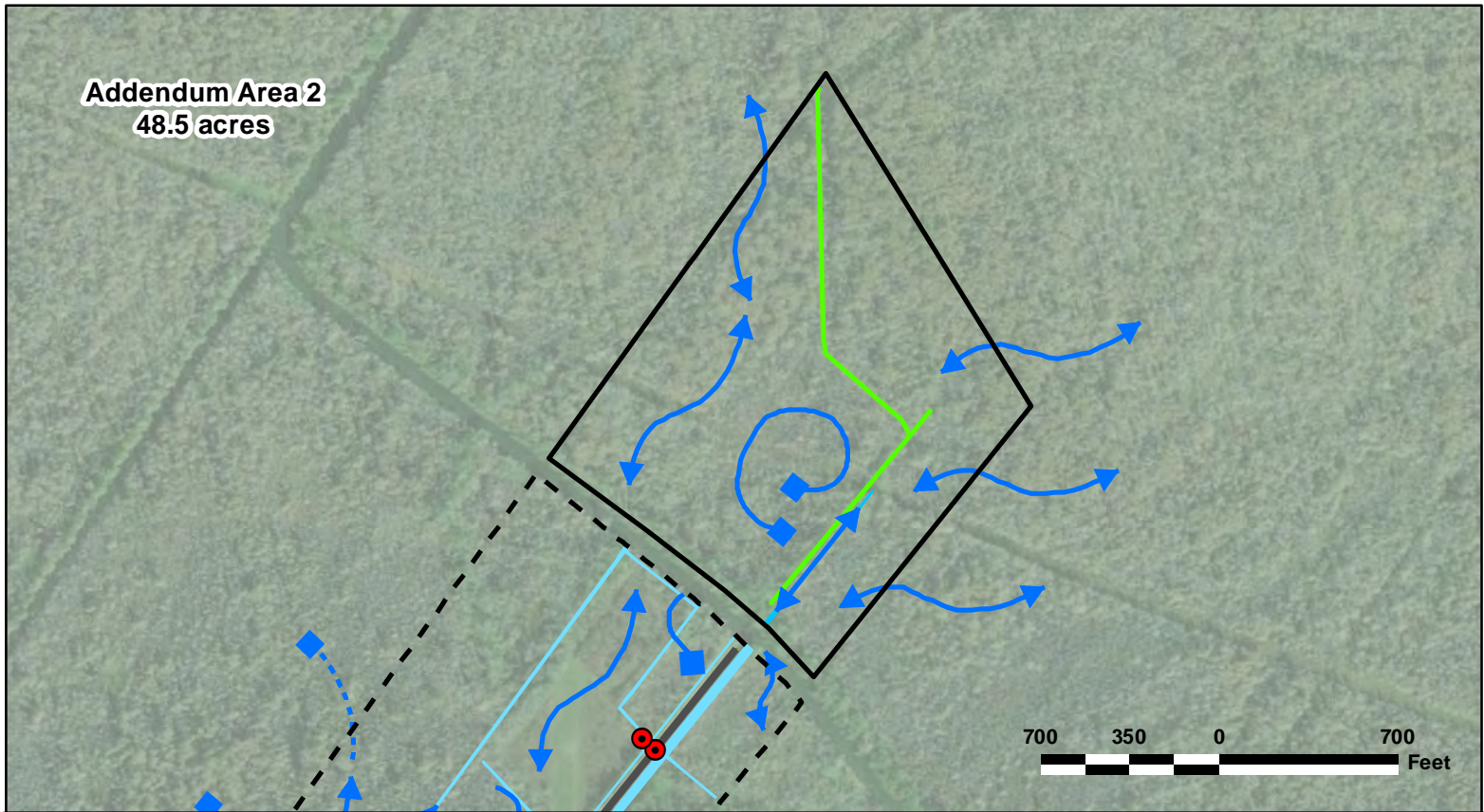


- Legend**
- BMB Property Boundary (231.1 acres)
 - BMB Addendum Boundary (58.9 acres)
 - Tidal Flux
 - Channelized Flow
 - Rainfall Runoff

Map Notes:
1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.

Raceland 330, LLC
Des Allemands, LA
AREA HYDROLOGY
LAFOURCHE PARISH, LA
Created: AGB/ArcView
Approved: GLF
Date: 03/24/2020

FIGURE 11



Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Existing Waterways
- Channelized/Surface Flow
- Flow Block offsite
- Surface Flow
- Blocked Flow
- Blocked Flow
- Access Road
- Existing Addendum Berm to Remain
- Culverts

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

CURRENT HYDROLOGY

LAFOURCHE PARISH, LA

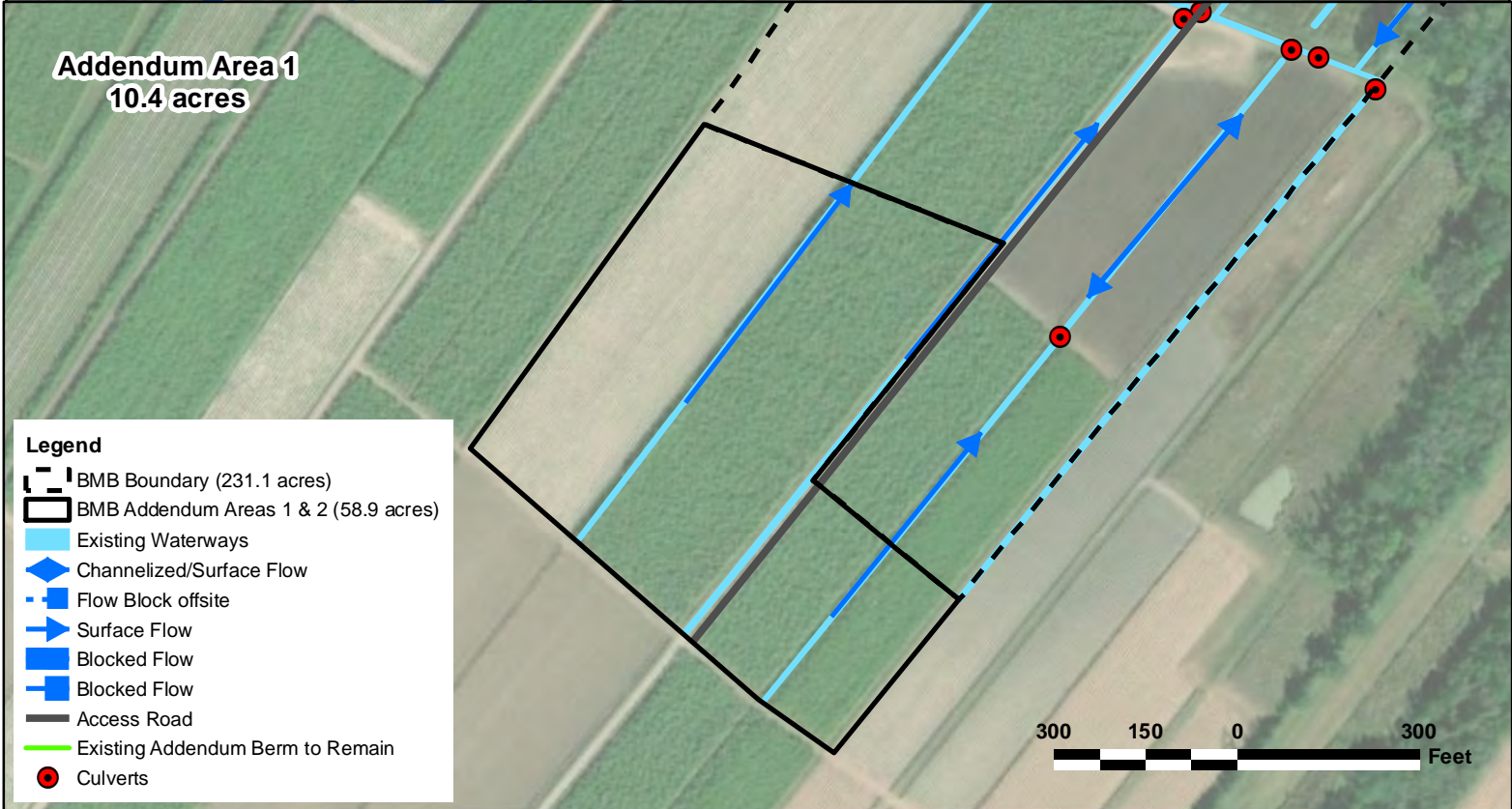
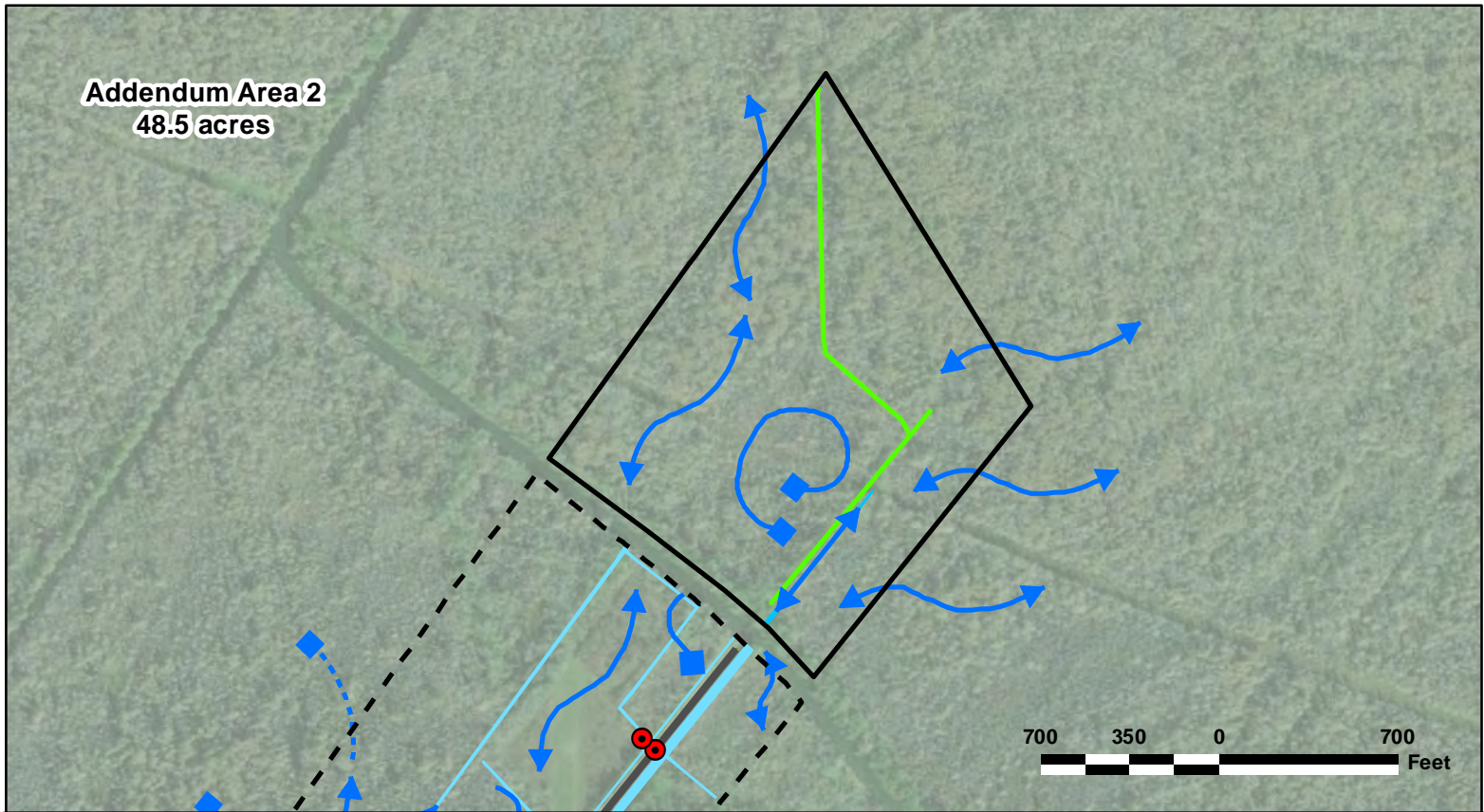
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 12



Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Existing Waterways
- Channelized/Surface Flow
- Flow Block offsite
- Surface Flow
- Blocked Flow
- Blocked Flow
- Access Road
- Existing Addendum Berm to Remain
- Culverts

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

CURRENT HYDROLOGY

LAFOURCHE PARISH, LA

Created : AGB/ArcView

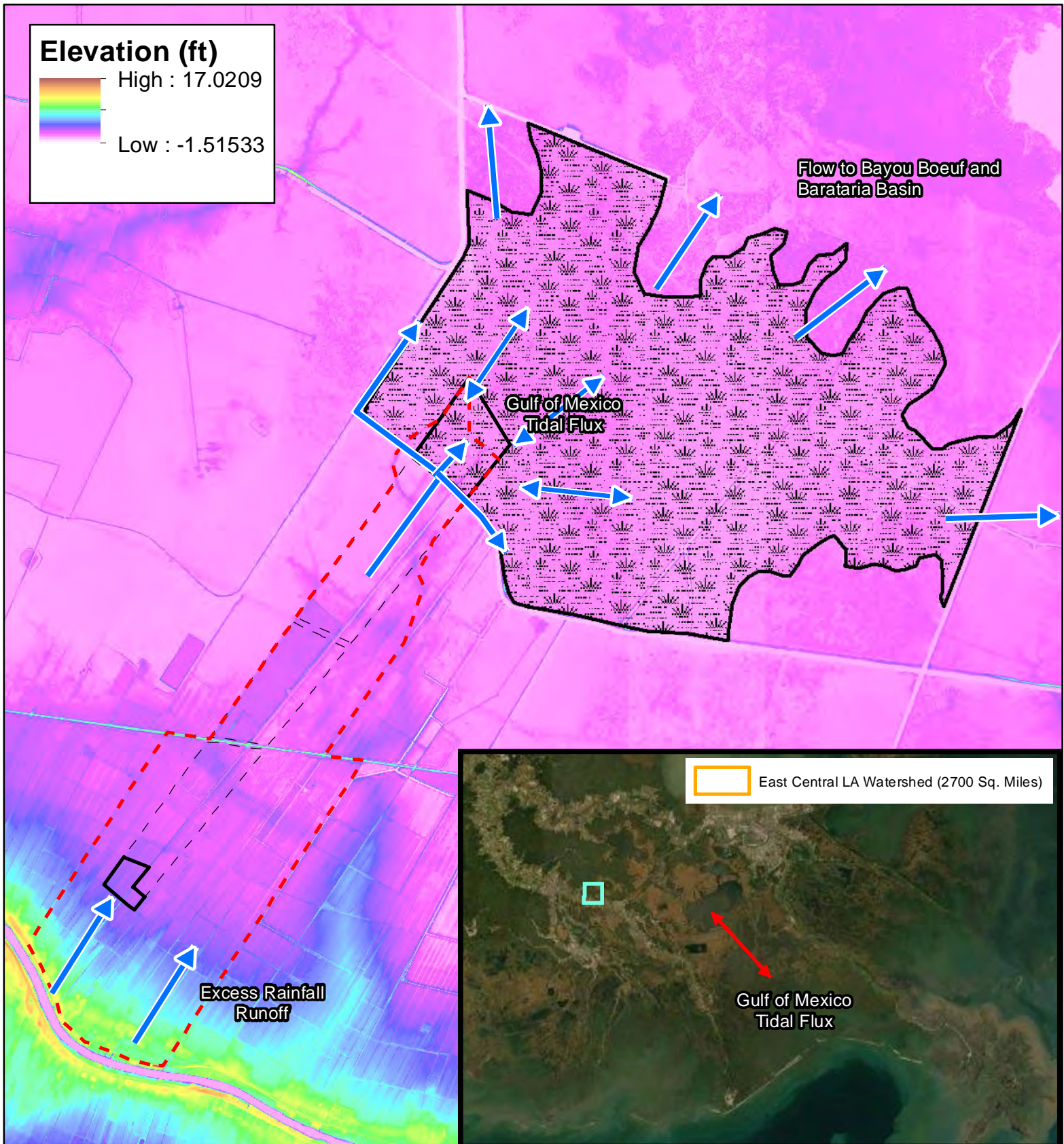
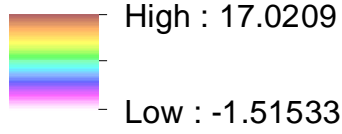
Approved : GLF

Date : 03/24/2020

Map No. :

ATTACHMENT MWP-A
FIGURE 12

Elevation (ft)



Legend

- Contributing Drainage Area (785.3 acres)
- BMB Property Boundary (231.1 acres)
- BMB Addendum Boundary (58.9 acres)
- Adjacent Cypress Swamp (~1,500 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.



Raceland 330, LLC

Des Allemands, LA

CONTRIBUTING DRAINAGE AREA

LAFOURCHE PARISH, LA

Created : AGB/ArcView

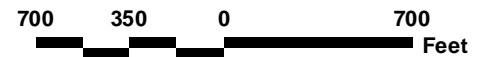
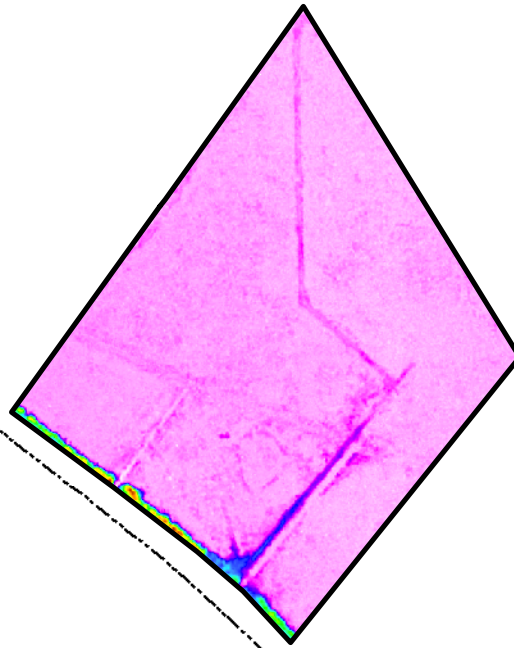
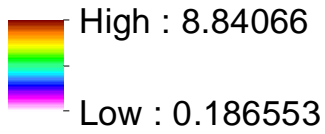
Approved : GLF

Date :

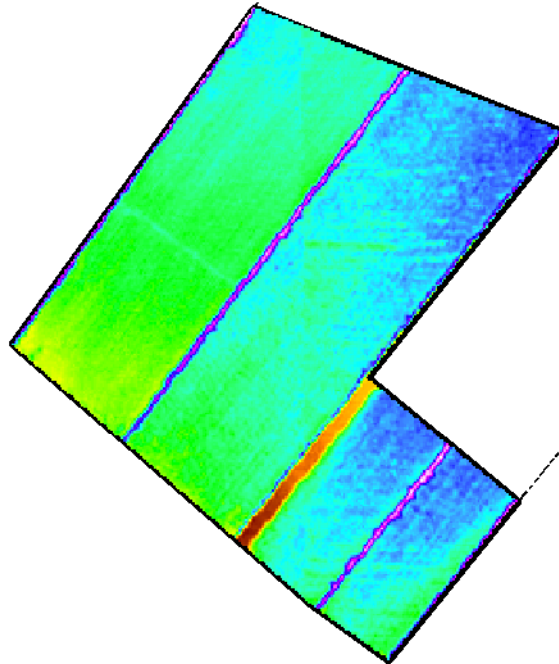
Map No. : 03/24/2020

FIGURE 13

Elevation (ft)



Elevation (ft)



Legend

- BMB Property Boundary (231.1 acres)
- BMB Addendum Boundary (58.9 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

ELEVATION MAP

LAFOURCHE PARISH, LA

Created : AGB/ArcView

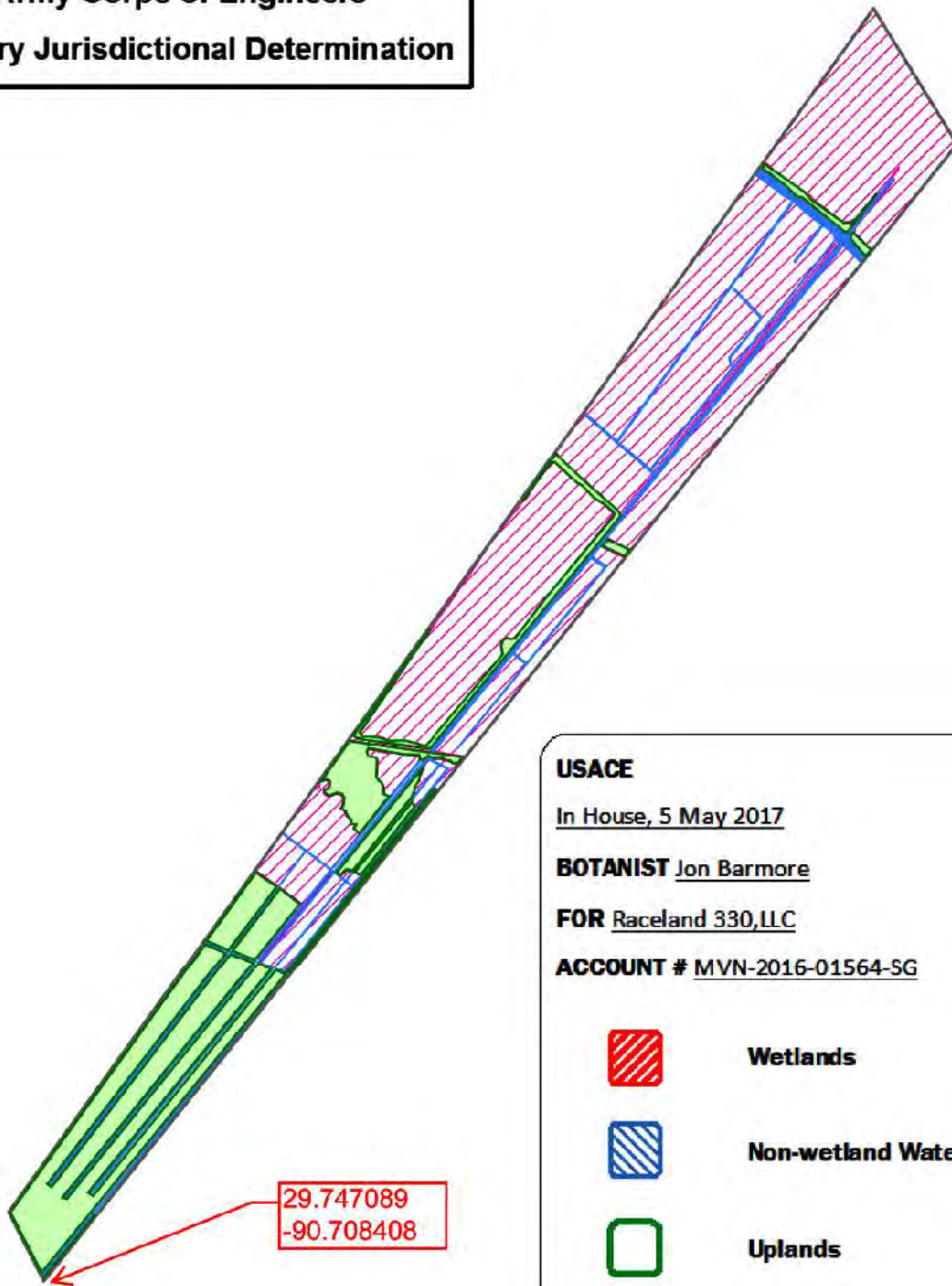
Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 14

US Army Corps of Engineers
Preliminary Jurisdictional Determination



USACE

In House, 5 May 2017

BOTANIST Jon Barmore

FOR Raceland 330, LLC

ACCOUNT # MVN-2016-01564-SG



Wetlands



Non-wetland Waters



Uplands

950 475 0 950
 Feet



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

WETLAND MAP

LAFOURCHE PARISH, LA

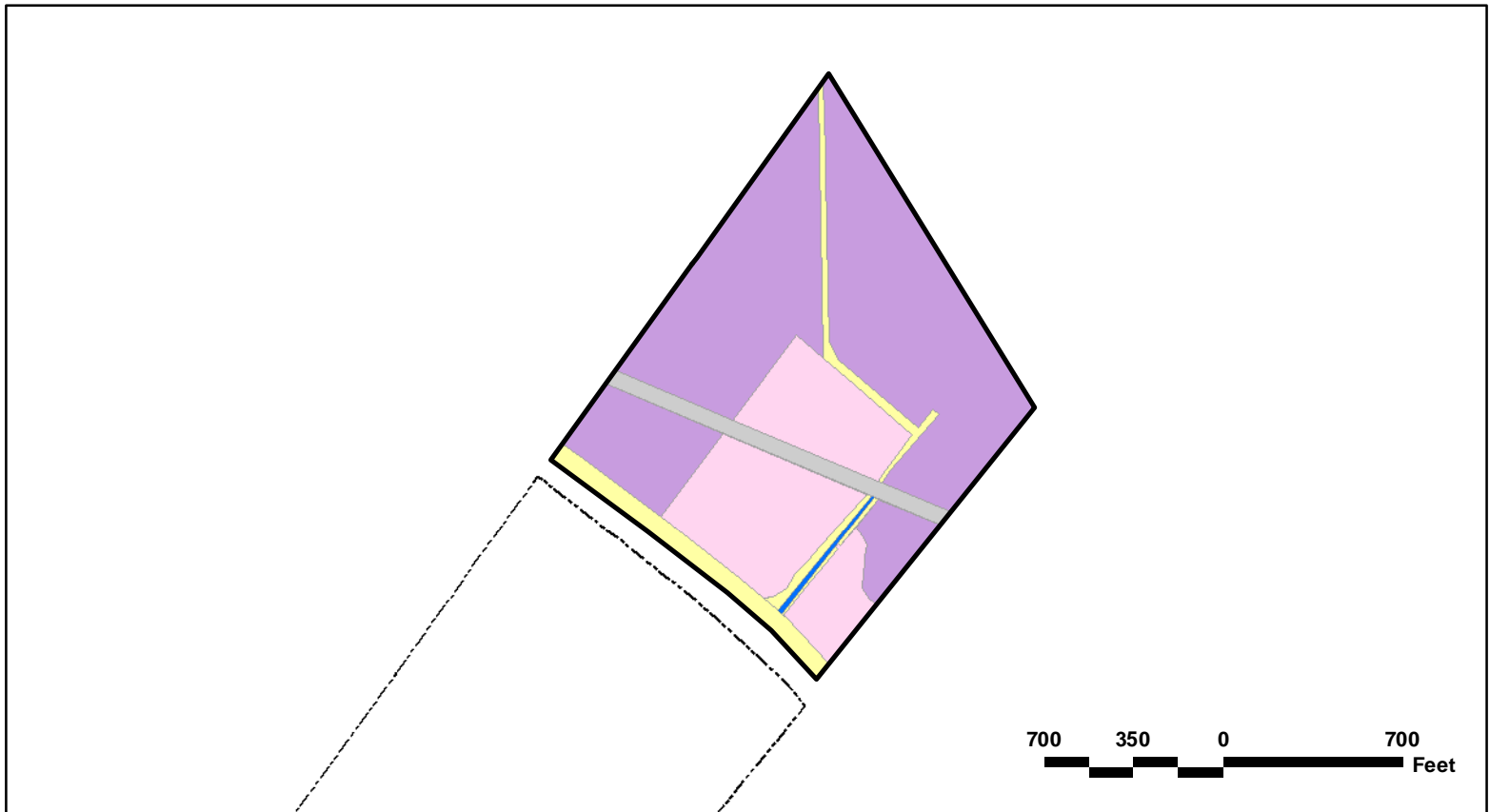
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 15



Legend

- BMB Addendum Areas 1 & 2 (58.9 acres)
- BMB Property Boundary (231.1 acres)
- Addendum Area 1 Plant Communities**
- (1) Non-Wetland Active Agricultural Field (Sugarcane) (10.1 acres)
- Addendum Area 2 Plant Communities**
- (1) Cypress Tupelo Gum Swamp (30.0 acres)
- (2) Degraded Swamp (12.3 acres)
- (3) Wetland Forested Baffle Levee/Forested Spoilbank (4.0 acres)
- (4) Herbaceous Wetland (ROW) (2.0 acres)
- Roadways (0.2 acres)
- Pre-Mitigation Waterways (0.3 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

PLANT COMMUNITIES

LAFOURCHE PARISH, LA

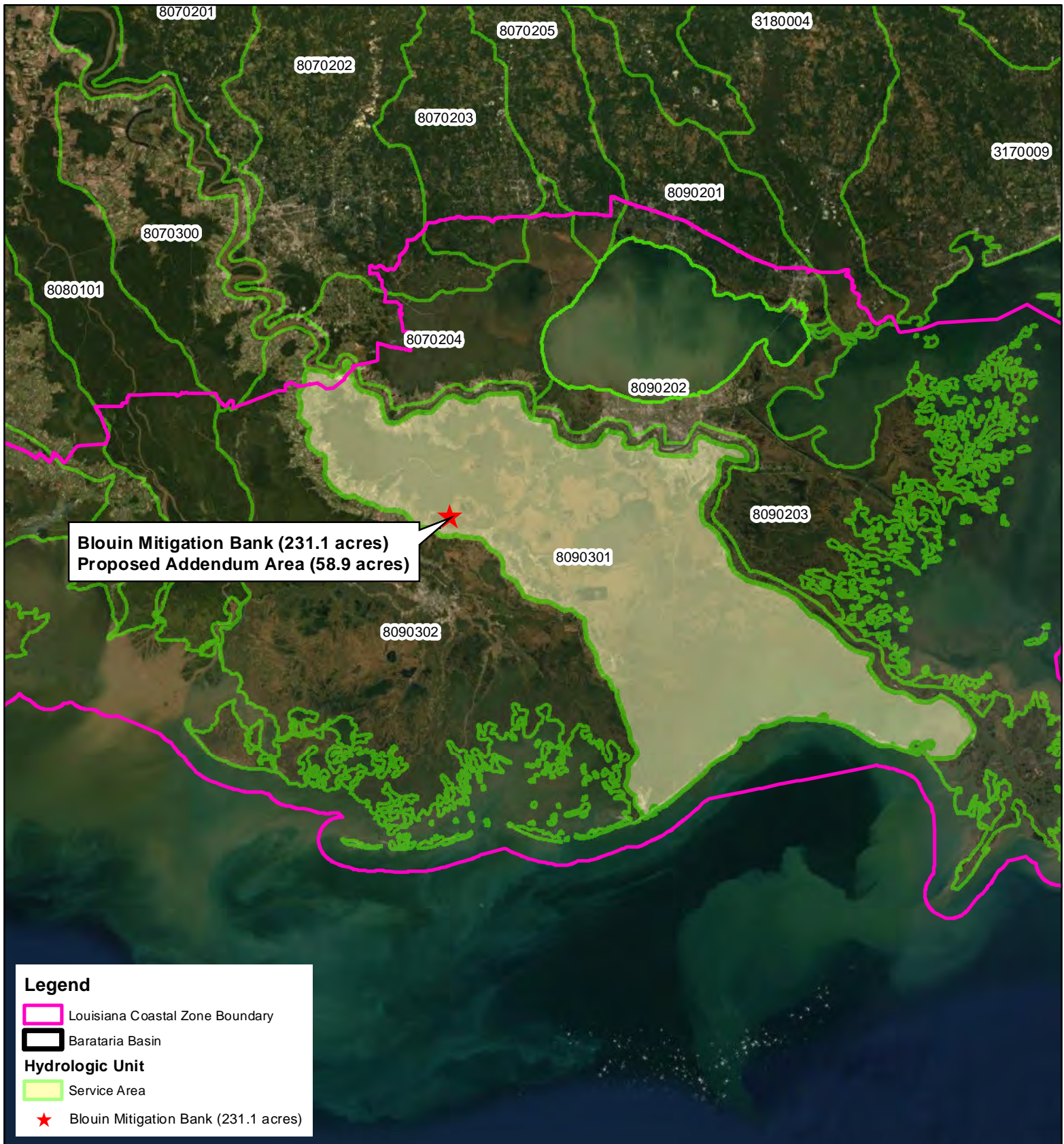
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 16



Legend

- Louisiana Coastal Zone Boundary
- Barataria Basin
- Hydrologic Unit**
- Service Area
- ★ Blouin Mitigation Bank (231.1 acres)

20.0 10.0 0 20.0 Miles



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.

Raceland 330, LLC

Des Allemands, LA

WATERSHED/SERVICE AREA MAP

LAFORCHE PARISH, LA

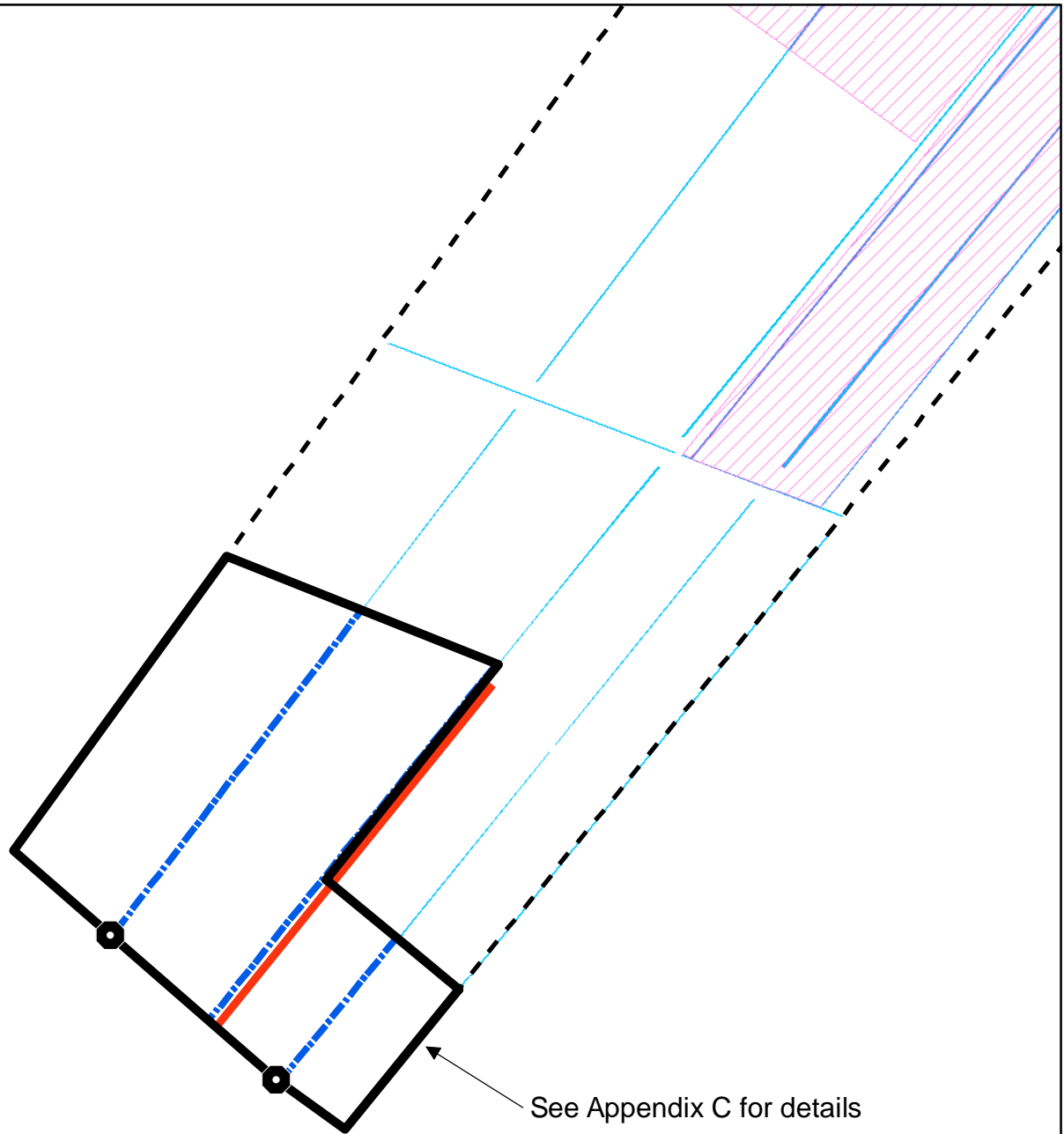
Created : AGB/ArcView

Approved : GLF




Date : 03/24/2020

Map No. :



FIGURE 17



Legend

-  Existing Wetlands
-  Pre-Mitigation Waterways
-  Degrade Road (780 In ft)
-  Reshape Ag Drain (1,874 In ft)

Legend

-  BMB Addendum Areas 1 & 2 (58.9 acres)
-  Property Boundary (231.1 acres)

300 150 0 300 Feet

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.



Raceland 330, LLC

Des Allemands, LA

POTENTIAL HYDROLOGY IMPROVEMENTS

LAFOURCHE PARISH, LA

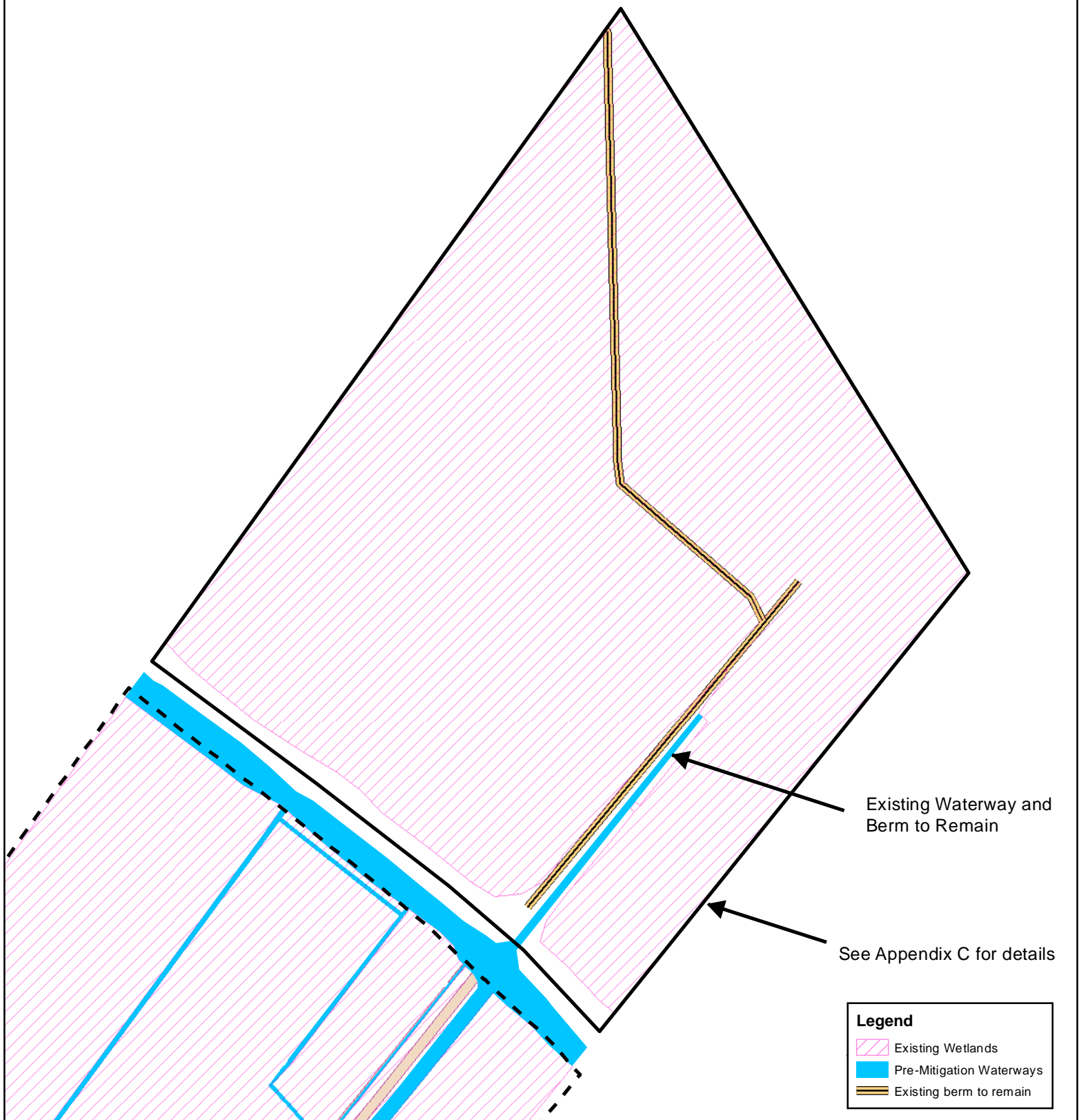
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 18



Legend

- Property Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)

300 150 0 300 Feet

Map Notes:

- The boundary shown is based on the boundary survey provided by the client.
- Map projected to NAD83 UTM Zone 15.



Raceland 330, LLC

Des Allemands, LA

POTENTIAL HYDROLOGY IMPROVEMENTS

LAFOURCHE PARISH, LA

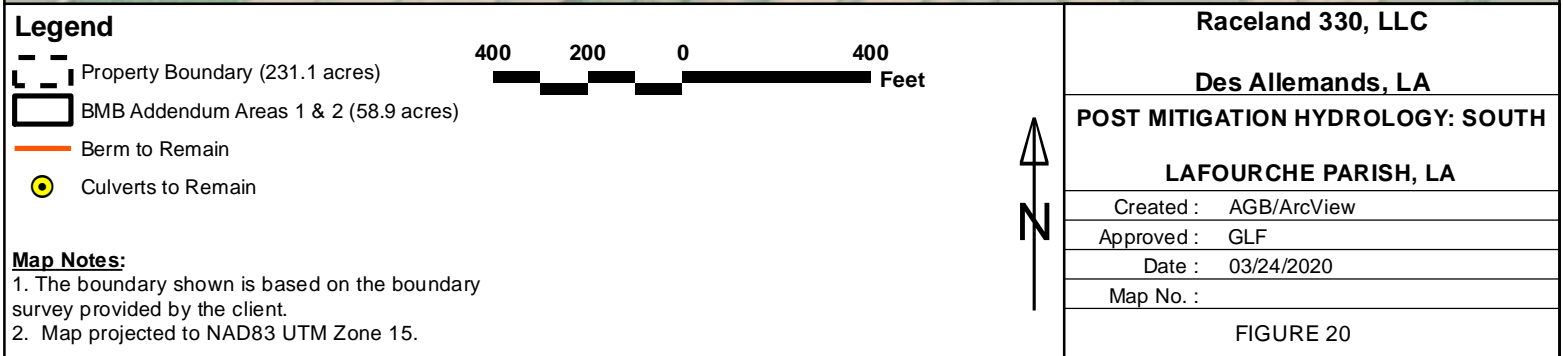
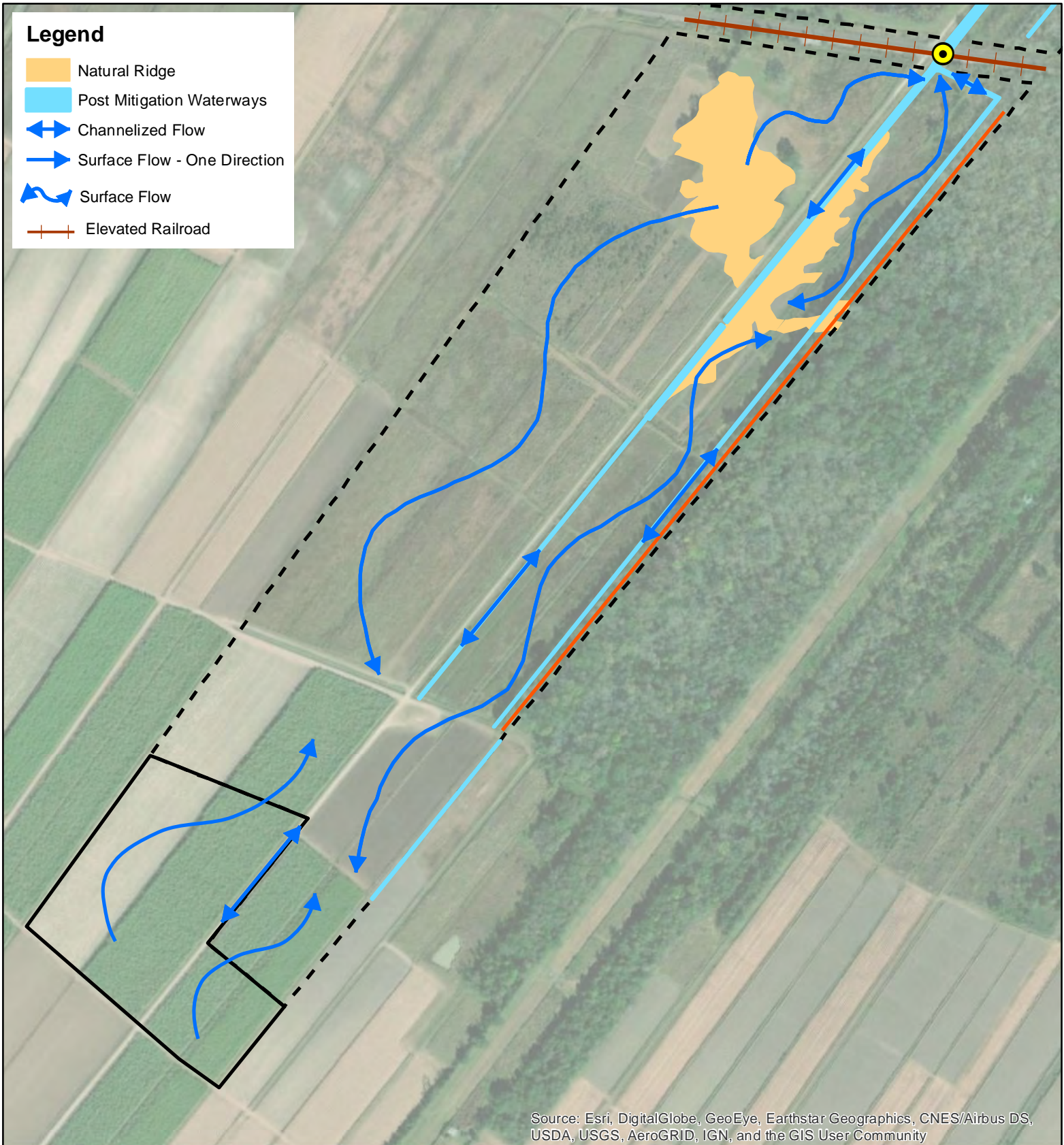
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2018

Map No. :

FIGURE 19



Legend

- Post Mitigation Waterways
- Existing Addendum Berm to Remain
- Ridge
- Existing gapped berm to remain
- Post mitigation gapped berm
- ←

→

 Surface Flow
- ←

→

 Blocked Flow
- Flow Blocked offsite

blocked below
0 ft elevation

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Culverts to Remain

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

500 250 0 500
Feet



Raceland 330, LLC

Des Allemands, LA

POST MITIGATION HYDROLOGY: NORTH

LAFOURCHE PARISH, LA

Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 21

Legend

- Post Mitigation Waterways
- Existing Addendum Berm to Remain
- Ridge
- Existing gapped berm to remain
- Post mitigation gapped berm
- ←

→

 Surface Flow
- ←

→

 Blocked Flow
- Flow Blocked offsite

blocked below
0 ft elevation

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Culverts to Remain

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

500 250 0 500
Feet



Raceland 330, LLC

Des Allemands, LA

POST MITIGATION HYDROLOGY: NORTH

LAFOURCHE PARISH, LA

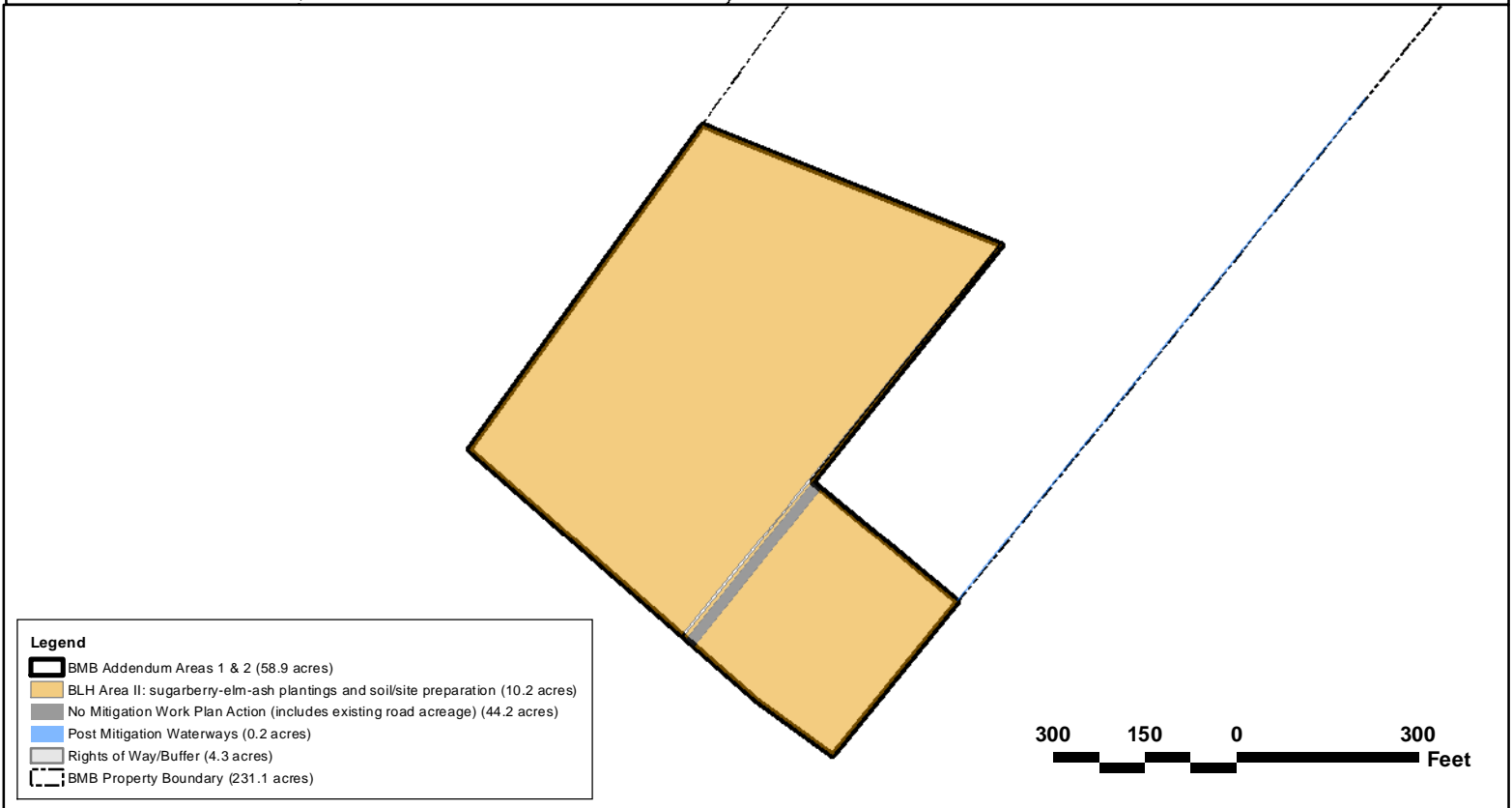
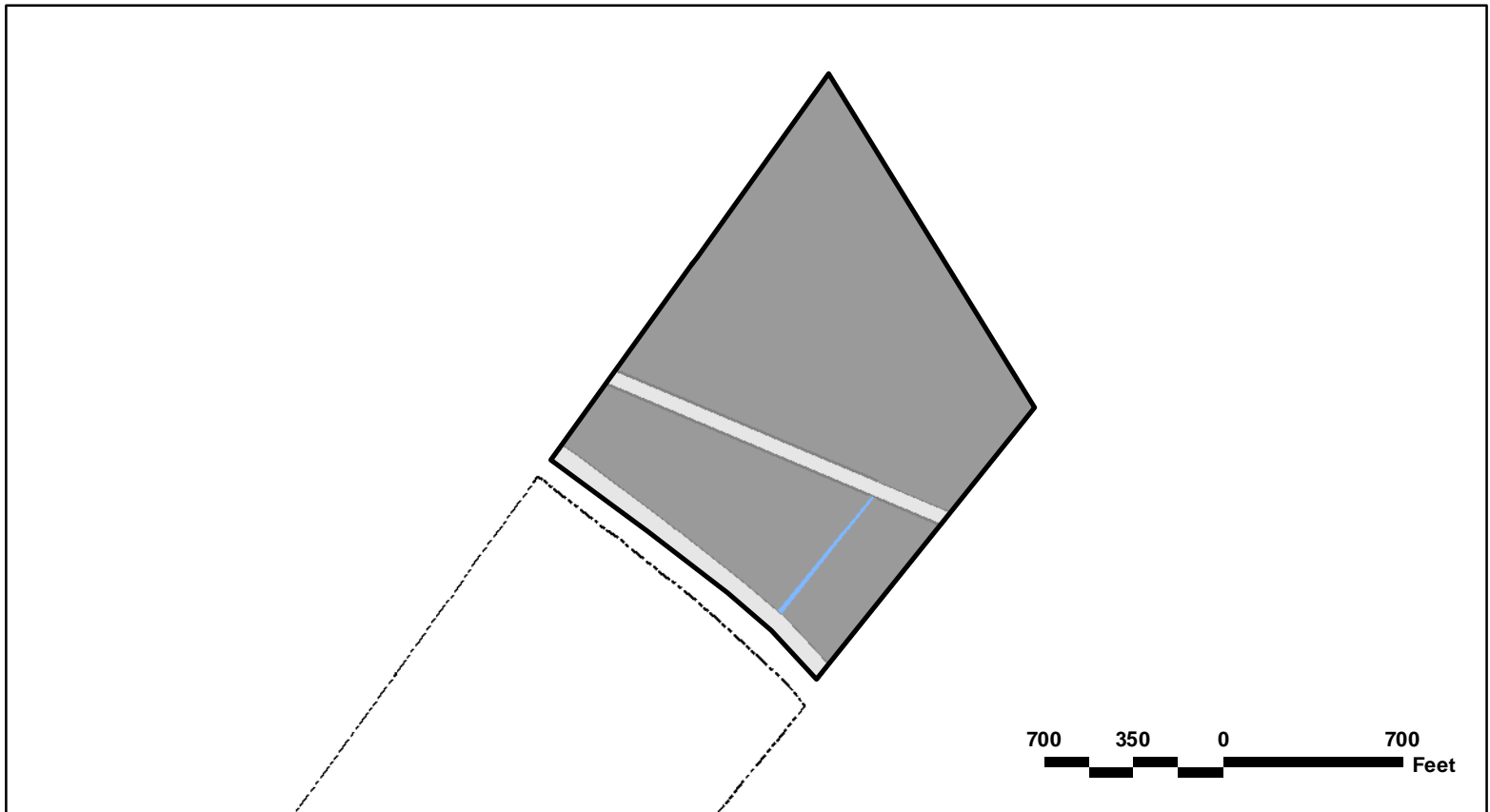
Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

ATTACHMENT MWP-A
FIGURE 21



Legend

- BMB Addendum Areas 1 & 2 (58.9 acres)
- BLH Area II: sugarberry-elm-ash plantings and soil/site preparation (10.2 acres)
- No Mitigation Work Plan Action (includes existing road acreage) (44.2 acres)
- Post Mitigation Waterways (0.2 acres)
- Rights of Way/Buffer (4.3 acres)
- BMB Property Boundary (231.1 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

VEGETATION WORK PLAN

LAFOURCHE PARISH, LA

Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :

FIGURE 22

Legend

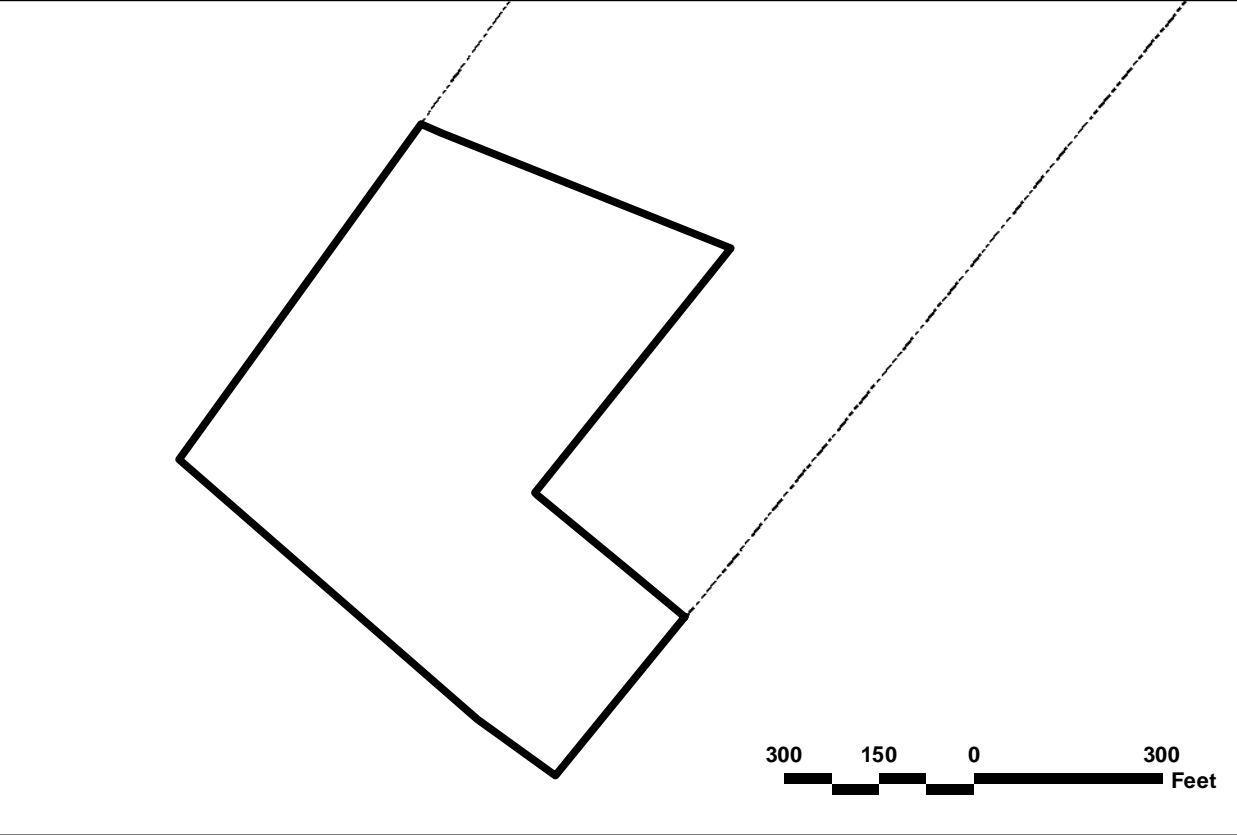
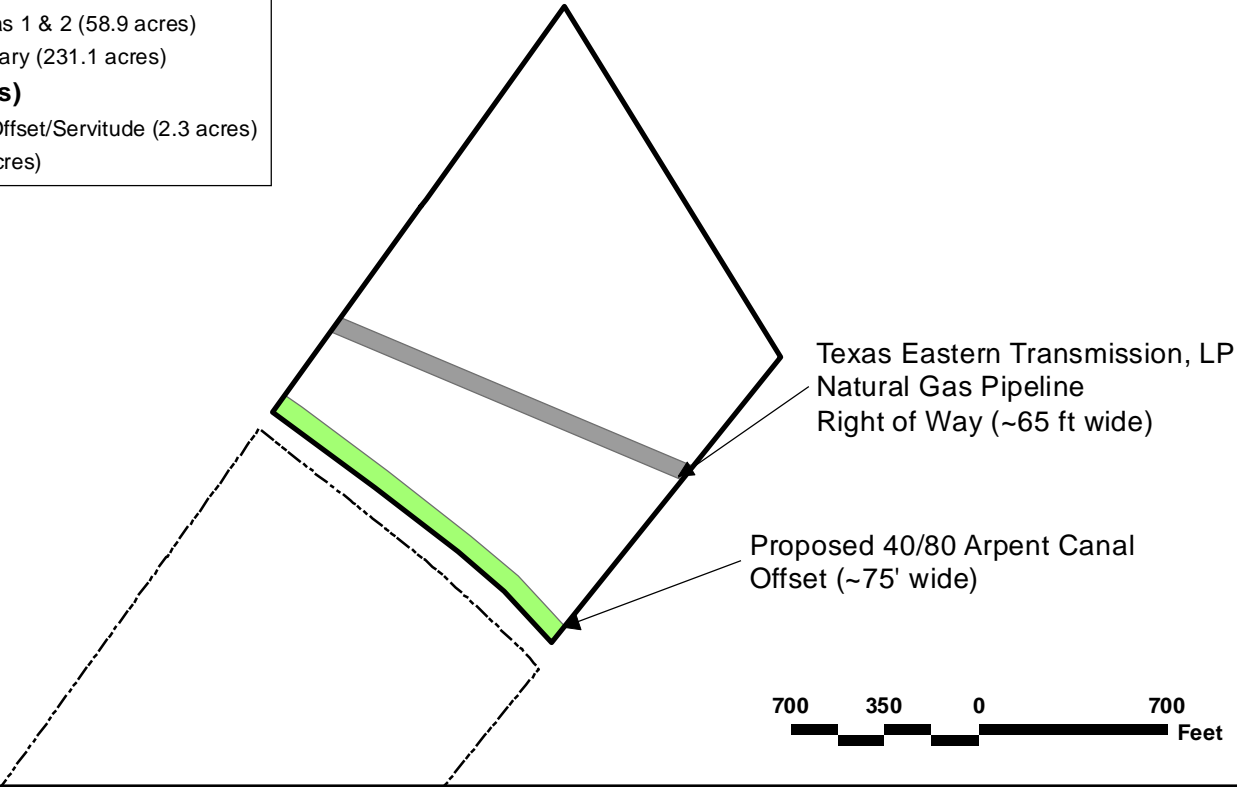
BMB Addendum Areas 1 & 2 (58.9 acres)

BMB Property Boundary (231.1 acres)

ROW/Offset (4.3 acres)

40/80 Arpent Canal Offset/Servitude (2.3 acres)

Pipeline ROW (2.0 acres)

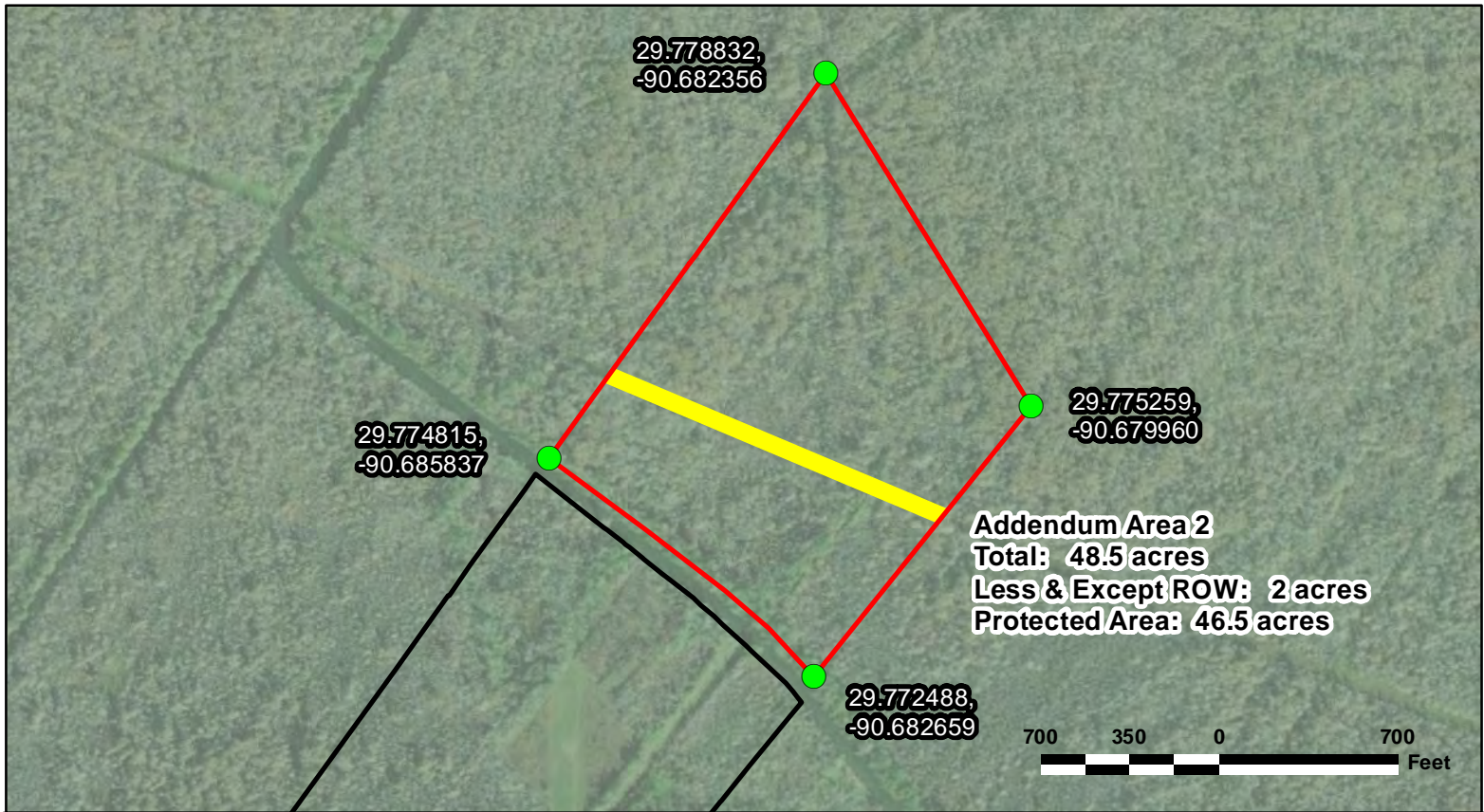


Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC	
Des Allemands, LA	
EXISTING RIGHTS OF WAY	
LAFOURCHE PARISH, LA	
Created :	AGB/ArcView
Approved :	GLF
Date :	03/24/2020
Map No. :	
FIGURE 23	



Legend

BMB Addendum Boundary (58.9 acres)

BMB Property Boundary (231.1 acres)

Less and Except

Pipeline ROW (2.0 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

BANK BOUNDARY

LAFOURCHE PARISH, LA

Created : AGB/ArcView

Approved : GLF

Date : 03/24/2020

Map No. :


FIGURE 24


Appendix A


November and December 2019 Wetland Data Points



Legend

 BMB Addendum Boundary (58.9 acres)

 BMB Property Boundary (231.1 acres)

 Wetland Data Points



- Map Notes:**
- 1. The boundary shown is based on the boundary survey provided by the client.
 - 2. Map projected to NAD83 UTM Zone 15.
 - 3. BMB = Blouin Mitigation Bank

Raceland 330, LLC	
Des Allemands, LA	
NOV-DEC 2019	
WETLAND DATA POINTS	
LAFOURCHE PARISH, LA	
Created :	AGB/ArcView
Approved :	GLF
Date :	03/24/2020
Map No. :	
FIGURE A-1	

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Blouin Mitigation City/County: Raceland/Lafourche Sampling Date: 11/21/2019
 Applicant/Owner: Mike Bernard State: LA Sampling Point: 1
 Investigator(s): Michael Sullivan Section, Township, Range: Section 44, T15S, R17E
 Landform (hillslope, terrace, etc.): Sugar cane Field Local relief (concave, convex, none): None Slope (%): 0-1
 Subregion (LRR or MLRA): LRR O Lat: 29 7516 Long: 90 7037 Datum: NAD 83
 Soil Map Unit Name: Cancienne Silt Loam (Cm) / Cancienne Silty Clay Loam NWI classification: Hydric
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: Freshly harvested sugar cane field. (bare ground)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input checked="" type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Data taken at a dry time of year, following a harvest. There were soil cracks and crawfish burrows all around indicating the area had been inundated with water recently.		

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

 Sampling Point: 1

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Sapling Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Shrub Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Herb Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Woody Vine Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

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

Dominance Test worksheet:

 Number of Dominant Species That Are OBL, FACW, or FAC: NA (A)
 Total Number of Dominant Species Across All Strata: NA (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: NA (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: <u>0</u> (A)	<u>0</u> (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present?

Yes

☐

No

☒

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10 YR 4-1	100						Organics Present
3-12	10 YR 5-1	80						
	Gley 1 6-N	15	7 5 YR 5-6	5	C	PL	SL	

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

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

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present?

Yes



No



Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Blouin Mitigation City/County: Raceland/Lafourche Sampling Date: 11/21/2019
 Applicant/Owner: Mike Bernard State: LA Sampling Point: 2
 Investigator(s): Michael Sullivan Section, Township, Range: Section 44, T15S, R17E
 Landform (hillslope, terrace, etc.): Sugar Cane Field Local relief (concave, convex, none): None Slope (%): 0-1
 Subregion (LRR or MLRA): LRR O Lat: 29.7520 Long: 90.7040 Datum: NAD 83
 Soil Map Unit Name: Cancienne Silt Loam (Cm) / Cancienne Silty Clay Loam NWI classification: Hydric
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: Freshly harvested sugar cane field. (replanted with sugar cane seedlings)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input checked="" type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12 (Moist</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available.		
Remarks: Data taken at a dry time of year, following a harvest. There were soil cracks and crawfish burrows all around indicating the area had been inundated with water recently. The tilled under cane husks were all oxidized as were the roots of the living seedlings.		

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

 Sampling Point: 2

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
0 = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Sapling Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
0 = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Shrub Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
0 = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Herb Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Recently planted sugarcane seedlings	100	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
100 = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Woody Vine Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
0 = Total Cover			
50% of total cover: _____ 20% of total cover: _____			

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: NA (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: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present?

Yes ☐ No ☒

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

Recently harvested sugar cane field, seedlings recently planted.

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10 YR 5-3	100			C	M	SL	Loose topsoil
3-10	10 Yr 3-2	95	10 YR 5-8	5	C	PL	C/L	

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

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

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Blouin Mitigation City/County: Raceland/Lafourche Sampling Date: 11/21/2019
 Applicant/Owner: Mike Bernard State: LA Sampling Point: 3
 Investigator(s): Michael Sullivan Section, Township, Range: Section 44, T15S, R17E
 Landform (hillslope, terrace, etc.): sugar cane field Local relief (concave, convex, none): None Slope (%): 0-1
 Subregion (LRR or MLRA): LRR O Lat: 29.7534 Long: 90 7026 Datum: NAD 83
 Soil Map Unit Name: Cancienne Silt Loam (Cm) / Cancienne Silty Clay Loam NWI classification: Hydric
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: Freshly harvested sugar cane field. (bare ground)		

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Moss Trim Lines (B16) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input checked="" type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) |

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):
 Water Table Present? Yes ☐ No ☒ Depth (inches):
 Saturation Present? Yes ☒ No ☐ Depth (inches): 12 (moist)
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Data taken at a dry time of year, following a harvest. There were soil cracks and crawfish burrows all around indicating the area had been inundated with water recently. Recently harvested & planted seedlings.

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

Sampling Point: 3

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
	<u>0</u>	= Total Cover		
	50% of total cover: _____ 20% of total cover: _____			
Sapling Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
	<u>0</u>	= Total Cover		
	50% of total cover: _____ 20% of total cover: _____			
Shrub Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
	<u>0</u>	= Total Cover		
	50% of total cover: _____ 20% of total cover: _____			
Herb Stratum (Plot size: <u>30 ft radius</u>)				
1. freshly planted seedlings	100	Yes	NI	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	<u>100</u>	= Total Cover		
	50% of total cover: _____ 20% of total cover: _____			
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2. _____				
3. _____				
4. _____				
5. _____				
	<u>0</u>	= Total Cover		
	50% of total cover: _____ 20% of total cover: _____			
Dominance Test worksheet:				
Number of Dominant Species That Are OBL, FACW, or FAC: <u>NA</u> (A)				
Total Number of Dominant Species Across All Strata: <u>NA</u> (B)				
Percent of Dominant Species That Are OBL, FACW, or FAC: <u>NA</u> (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:	<u>0</u>	(A)	<u>0</u>	(B)
Prevalence Index = B/A = _____				
Hydrophytic Vegetation Indicators:				
<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation				
<input type="checkbox"/> 2 - Dominance Test is >50%				
<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹				
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Five Vegetation Strata:				
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).				
Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.				
Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.				
Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, <u>and</u> woody plants, except woody vines, less than approximately 3 ft (1 m) in height.				
Woody vine – All woody vines, regardless of height.				
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10 YR 5-1	75	7.5 YR 5-6	25	C	PL	SL	hydric

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

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

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes



No



Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Blouin Mitigation City/County: Raceland/Lafourche Sampling Date: 12/20/2019
 Applicant/Owner: Mike Bernard State: LA Sampling Point: 4
 Investigator(s): Michael Sullivan Section, Township, Range: Section 44, T15S, R17E
 Landform (hillslope, terrace, etc.): Sugar Cane Field Local relief (concave, convex, none): None Slope (%): 0-1
 Subregion (LRR or MLRA): LRR O Lat: 29.7530 Long: 90.7034 Datum: NAD 83
 Soil Map Unit Name: Cancienne Silt Loam (Cm) / Cancienne Silty Clay Loam NWI classification: Hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: Recently planted sugar cane field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)
<input checked="" type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u>	Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>Moist</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available		
Remarks: Soft, wet ground standing water in some rows.		

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

 Sampling Point: 4

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. none observed				
2.				
3.				
4.				
5.				
6.				
				0 = Total Cover
50% of total cover: _____				20% of total cover: _____
Sapling Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2.				
3.				
4.				
5.				
6.				
				0 = Total Cover
50% of total cover: _____				20% of total cover: _____
Shrub Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2.				
3.				
4.				
5.				
6.				
				0 = Total Cover
50% of total cover: _____				20% of total cover: _____
Herb Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
				0 = Total Cover
50% of total cover: _____				20% of total cover: _____
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)				
1. none observed				
2.				
3.				
4.				
5.				
				0 = Total Cover
50% of total cover: _____				20% of total cover: _____
Remarks: (If observed, list morphological adaptations below)				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: NA (A)

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

 Percent of Dominant Species That Are OBL, FACW, or FAC: NA (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: <u>0</u> (A)	<u>0</u> (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in (7.6 cm) or larger in diameter at breast height (DBH)

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☒

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-12	10 YR 4-1	75	7.5 YR 5-6	25	C <input checked="" type="checkbox"/>	PL <input checked="" type="checkbox"/>	SL	hydric

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

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

Indicators for Problematic Hydric Soils³:

- | | | |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) | <input type="checkbox"/> 2 cm Muck (A10) (LRR S) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) | <input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> (MLRA 153B) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) | |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | | |

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Blouin Mitigation City/County: Raceland/Lafourche Sampling Date: 12/20/2019
 Applicant/Owner: Mike Bernard State: LA Sampling Point: 5
 Investigator(s): Michael Sullivan Section, Township, Range: Section 44, T15S, R17E
 Landform (hillslope, terrace, etc.): Sugar Cane Field Local relief (concave, convex, none): None Slope (%): 0-1
 Subregion (LRR or MLRA): LRR O Lat: 29.7535 Long: 90.7036 Datum: NAD 83
 Soil Map Unit Name: Cancienne Silt Loam (Cm) / Cancienne Silty Clay Loam NWI classification: Hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ☐ No ☒
 Hydric Soil Present? Yes ☒ No ☐
 Wetland Hydrology Present? Yes ☒ No ☐

Is the Sampled Area
within a Wetland? Yes ☐ No ☐

Remarks:

Recently harvested sugar cane field.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

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? Yes ☒ No ☐ Depth (inches): Moist
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Wet standing water.

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

 Sampling Point: 5

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Sapling Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Shrub Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Herb Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Woody Vine Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. none observed			
2.			
3.			
4.			
5.			
		0 = Total Cover	
50% of total cover: _____		20% of total cover: _____	

Remarks: (If observed, list morphological adaptations below)

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: NA (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: <u>0</u> (A)	<u>0</u> (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is $\leq 3.0^1$
- ☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height

Hydrophytic Vegetation Present?

Yes

☐

No

☒

Sampling Point: 5

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

Indicators for Problematic Hydric Soils³

- | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ___ 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) | <ul style="list-style-type: none"> ___ 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) | <ul style="list-style-type: none"> ___ 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) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Blouin Mitigation City/County: Raceland/Lafourche Sampling Date: 12/20/2019
 Applicant/Owner: Mike Bernard State: LA Sampling Point: 6
 Investigator(s): Michael Sullivan Section, Township, Range: Section 44, T15S, R17E
 Landform (hillslope, terrace, etc.): Sugar Cane Field Local relief (concave, convex, none): None Slope (%): 0-1
 Subregion (LRR or MLRA): LRR O Lat: 29.7527 Long: 90.7043 Datum: NAD 83
 Soil Map Unit Name: Cancienne Silt Loam (Cm) / Cancienne Silty Clay Loam NWI classification: Hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Recently harvested sugar cane field.			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input checked="" type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>Moist</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Wet standing water.			

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

 Sampling Point 6

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft radius</u>)				
1 none observed				
2				
3				
4				
5				
6				
	0	= Total Cover		
50% of total cover: _____		20% of total cover: _____		
Sapling Stratum (Plot size: <u>30 ft radius</u>)				
1 none observed				
2				
3				
4				
5				
6				
	0	= Total Cover		
50% of total cover: _____		20% of total cover: _____		
Shrub Stratum (Plot size: <u>30 ft radius</u>)				
1 none observed				
2				
3				
4				
5				
6				
	0	= Total Cover		
50% of total cover: _____		20% of total cover: _____		
Herb Stratum (Plot size: <u>30 ft radius</u>)				
1 none observed				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
	0	= Total Cover		
50% of total cover: _____		20% of total cover: _____		
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)				
1 none observed				
2				
3				
4				
5				
	0	= Total Cover		
50% of total cover: _____		20% of total cover: _____		
Dominance Test worksheet:				
Number of Dominant Species That Are OBL, FACW, or FAC:				<u>NA</u> (A)
Total Number of Dominant Species Across All Strata:				<u>NA</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:				<u>NA</u> (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:	<u>0</u> (A)	<u>0</u> (B)		
Prevalence Index = B/A = _____				
Hydrophytic Vegetation Indicators:				
<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation				
<input type="checkbox"/> 2 - Dominance Test is >50%				
<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹				
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Five Vegetation Strata:				
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in (7.6 cm) or larger in diameter at breast height (DBH).				
Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.				
Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.				
Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, <u>and</u> woody plants, except woody vines, less than approximately 3 ft (1 m) in height.				
Woody vine – All woody vines, regardless of height.				
Hydrophytic Vegetation Present?				
Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>		
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-12	10 YR 5-1	65	7.5 YR 5-6	35	C	PL	SL	hydric

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

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

Indicators for Problematic Hydric Soils³:

- | | | |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) | <input type="checkbox"/> 2 cm Muck (A10) (LRR S) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) | <input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> (MLRA 153B) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) | |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | | |

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

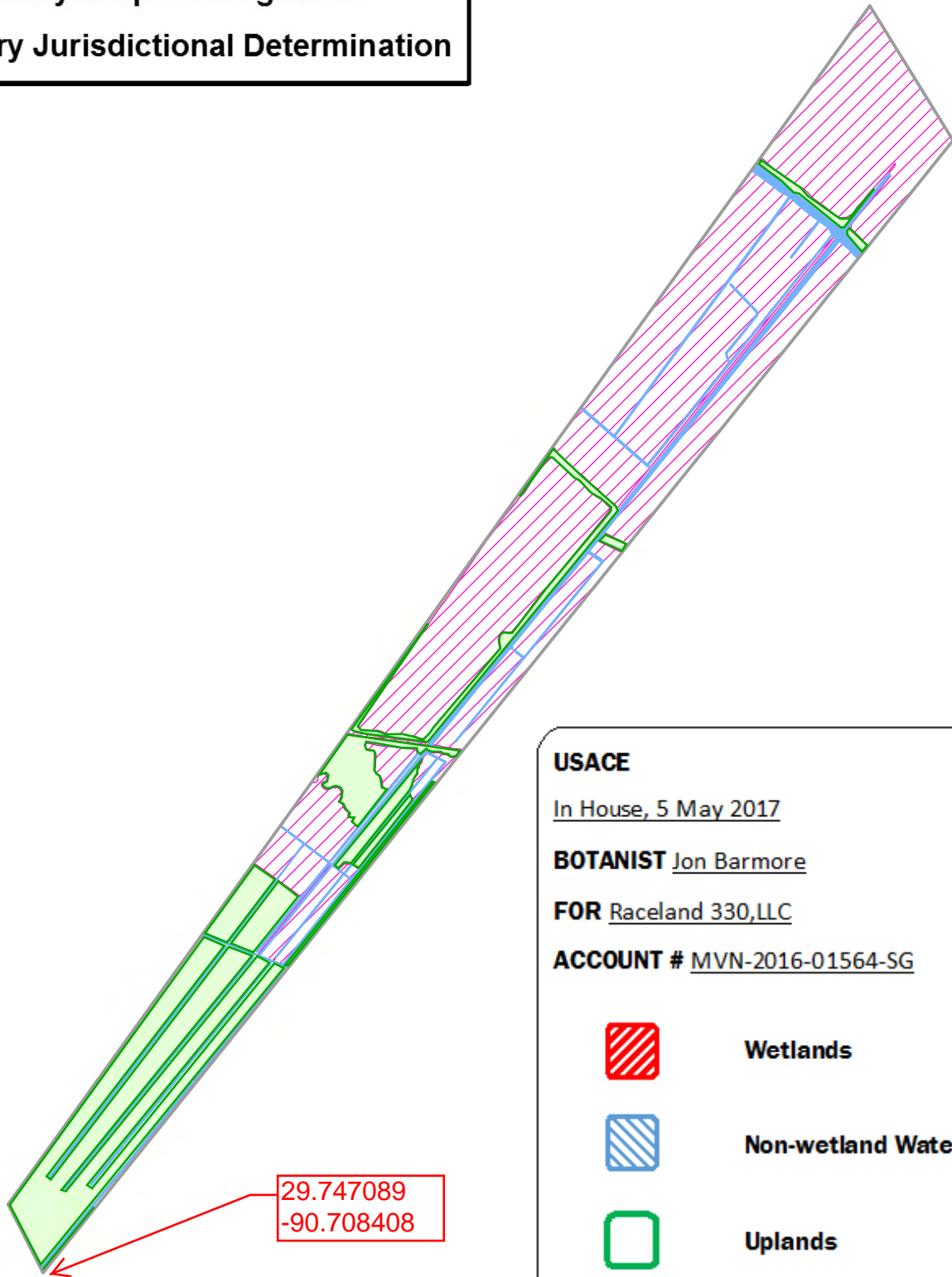
Hydric Soil Present? Yes ☒ No ☐

Remarks:

Appendix B

Jurisdictional Determination

US Army Corps of Engineers
Preliminary Jurisdictional Determination



USACE

In House, 5 May 2017

BOTANIST Jon Barmore

FOR Raceland 330, LLC

ACCOUNT # MVN-2016-01564-SG



Wetlands



Non-wetland Waters



Uplands

1500 750 0 1500
Feet



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.

RACELAND 330, LLC

**RACELAND, LA
POTENTIAL WETLANDS MAP**

LAFOURCHE PARISH, LA

Created : MRR/ArcView

Approved : GLF/ArcView

Date : 05/05/2017

Map No. :

FIGURE 15

Appendix C

Permit Drawings



Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas

4.0 2.0 0 4.0 Miles



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

VICINITY MAP

LAFORCHE PARISH, LA

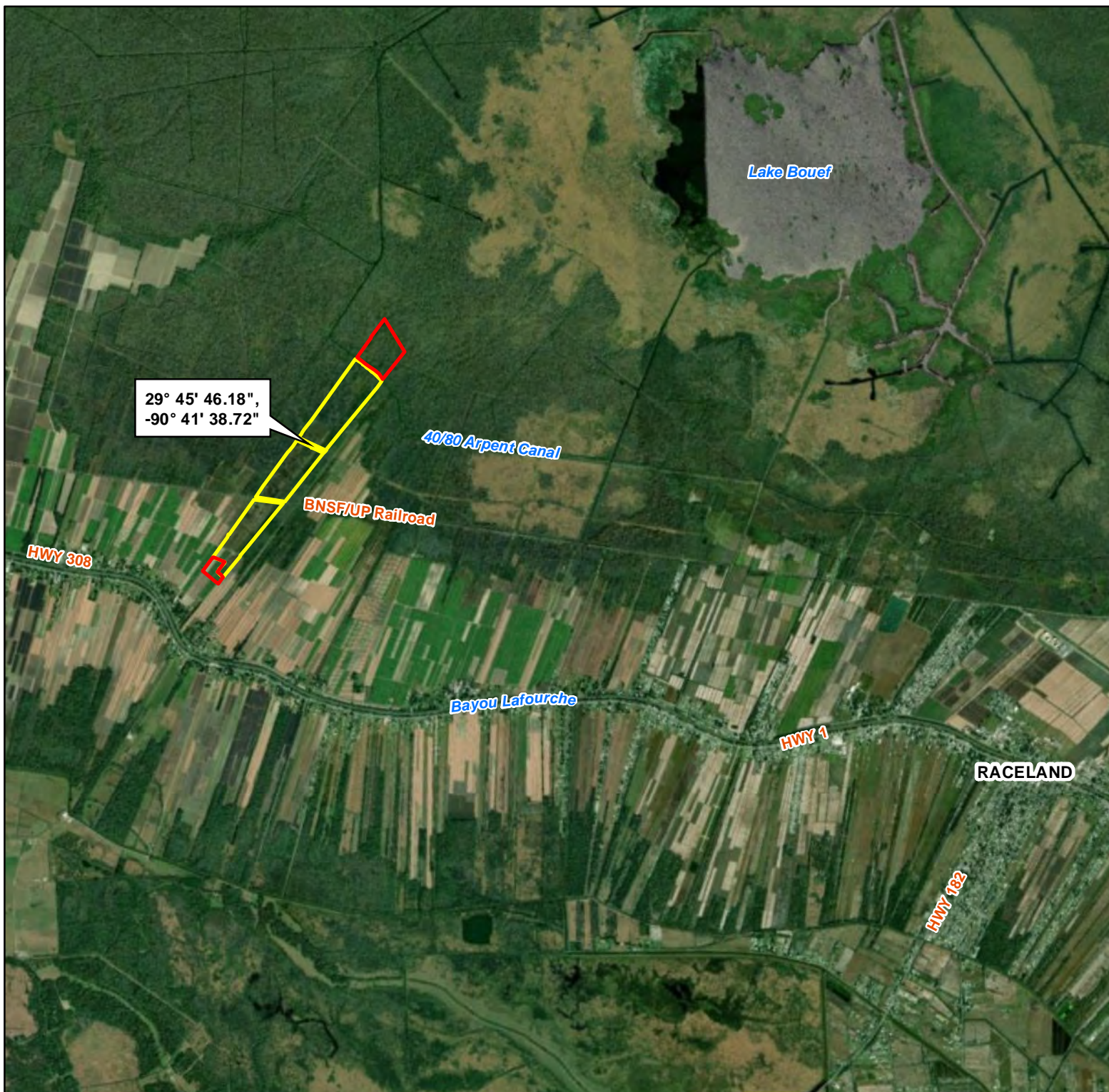
Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE C-1



Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)

1.0 0.5 0 1.0 Miles

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. Imagery sourced from April 2016 GoogleEarth
4. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

AERIAL LOCATION MAP

LAFOURCHE PARISH, LA

Created : AGB/ArcView














Approved : GLF

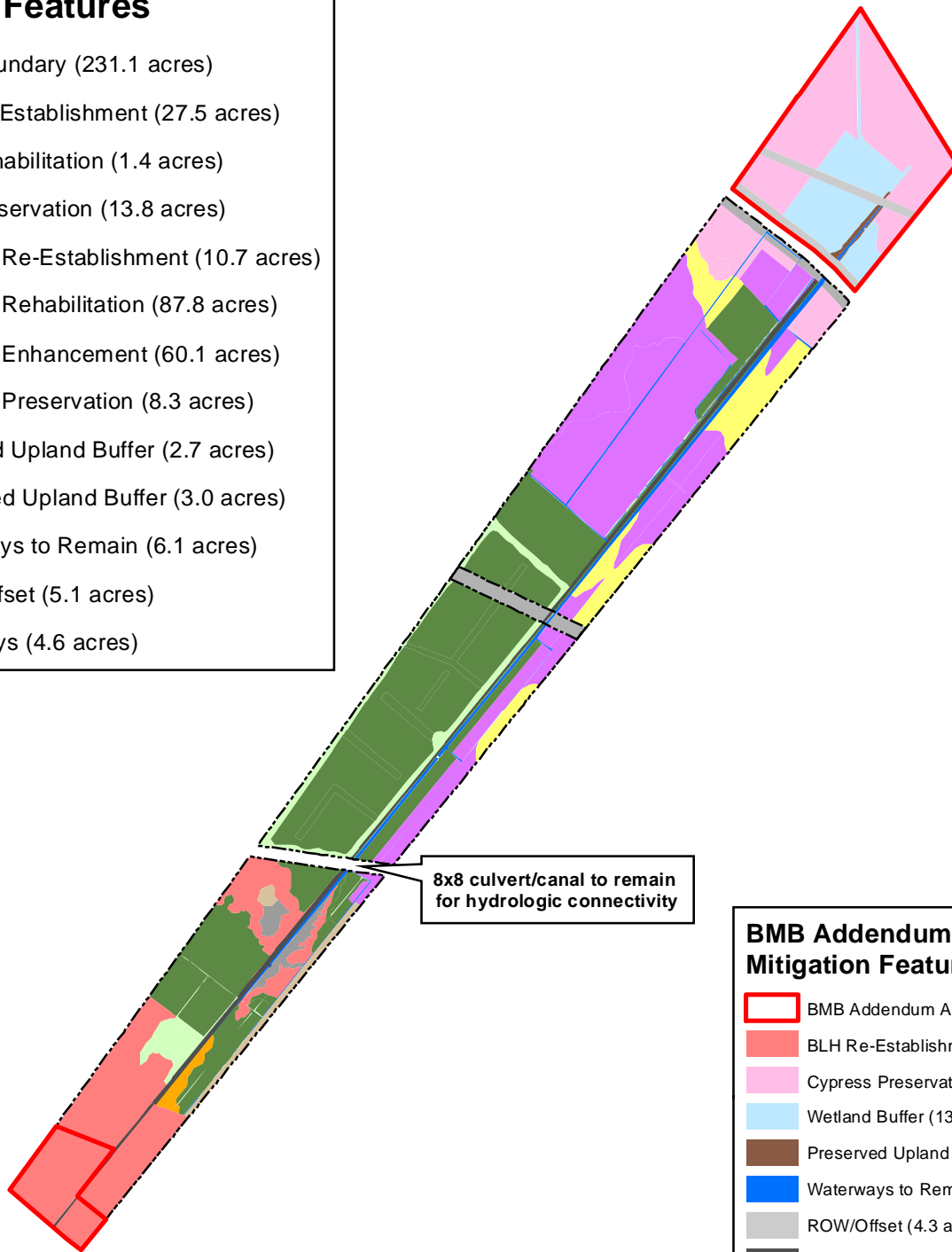
Date : 03/23/2020

Map No. :









FIGURE C-2

Mitigation Features

	BMB Boundary (231.1 acres)
	BLH Re-Establishment (27.5 acres)
	BLH Rehabilitation (1.4 acres)
	BLH Preservation (13.8 acres)
	Cypress Re-Establishment (10.7 acres)
	Cypress Rehabilitation (87.8 acres)
	Cypress Enhancement (60.1 acres)
	Cypress Preservation (8.3 acres)
	Restored Upland Buffer (2.7 acres)
	Preserved Upland Buffer (3.0 acres)
	Waterways to Remain (6.1 acres)
	ROW/Offset (5.1 acres)
	Roadways (4.6 acres)



BMB Addendum Areas 1 & 2 Mitigation Features

	BMB Addendum Areas 1 & 2 (58.9 acres)
	BLH Re-Establishment (10.2 acres)
	Cypress Preservation (30.0 acres)
	Wetland Buffer (13.3 acres)
	Preserved Upland Buffer (0.7 acres)
	Waterways to Remain (0.2 acres)
	ROW/Offset (4.3 acres)
	Roadways (0.2 acres)

1,400 700 0 1,400 Feet



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

**CEMVN USACE
MITIGATION FEATURES
LAFOURCHE PARISH, LA**

Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020


Map No. :


FIGURE C-3

DNR and USACE Mitigation Features


 BMB Boundary (231.1 acres)

DNR Mitigation Features

 BLH Restoration (31.6 acres)

 Cypress Restoration & Enhancement (158.6 acres)


USACE Mitigation Features


 Waterways to Remain (6.1 acres)


 BLH Re-Establishment (27.5 acres)

 Cypress Re-Establishment (10.7 acres)

 Preserved Upland Buffer (3.0 acres)

 BLH Rehabilitation (1.4 acres)

 Cypress Rehabilitation (87.8 acres)


 Cypress Enhancement (60.1 acres)

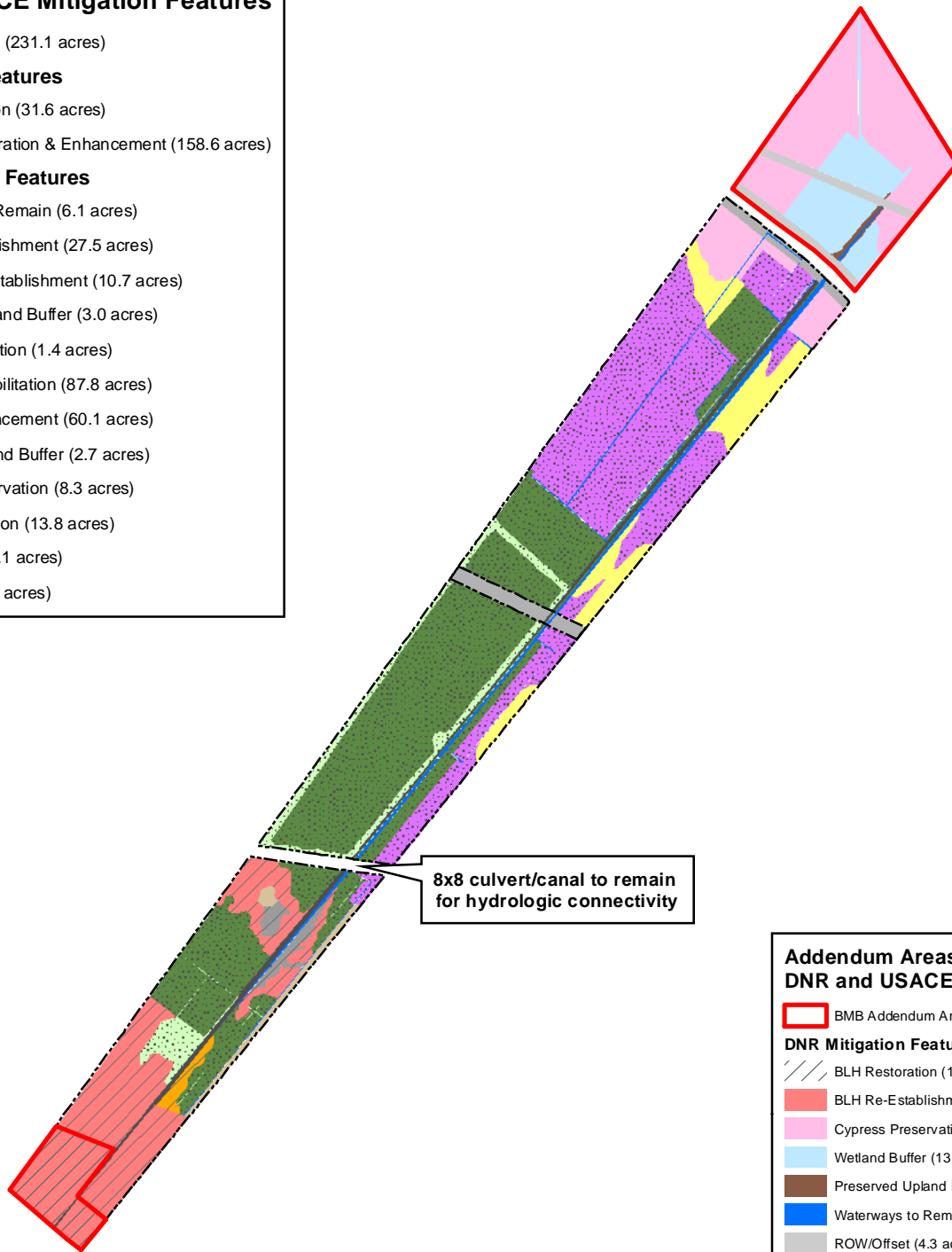
 Restored Upland Buffer (2.7 acres)

 Cypress Preservation (8.3 acres)

 BLH Preservation (13.8 acres)


 ROW/Offset (5.1 acres)

 Roadways (4.6 acres)




8x8 culvert/canal to remain
for hydrologic connectivity


Addendum Areas 1 & 2 DNR and USACE Mitigation Features


 BMB Addendum Areas 1 & 2 (58.9 acres)

DNR Mitigation Features


 BLH Restoration (10.2 acres)

 BLH Re-Establishment (10.2 acres)


 Cypress Preservation (30.0 acres)

 Wetland Buffer (13.3 acres)

 Preserved Upland Buffer (0.7 acres)

 Waterways to Remain (0.2 acres)

 ROW/Offset (4.3 acres)

 Roadways (0.2 acres)

1,400 700 0 1,400 Feet



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

**CEMVN USACE
MITIGATION FEATURES
LAFOURCHE PARISH, LA**

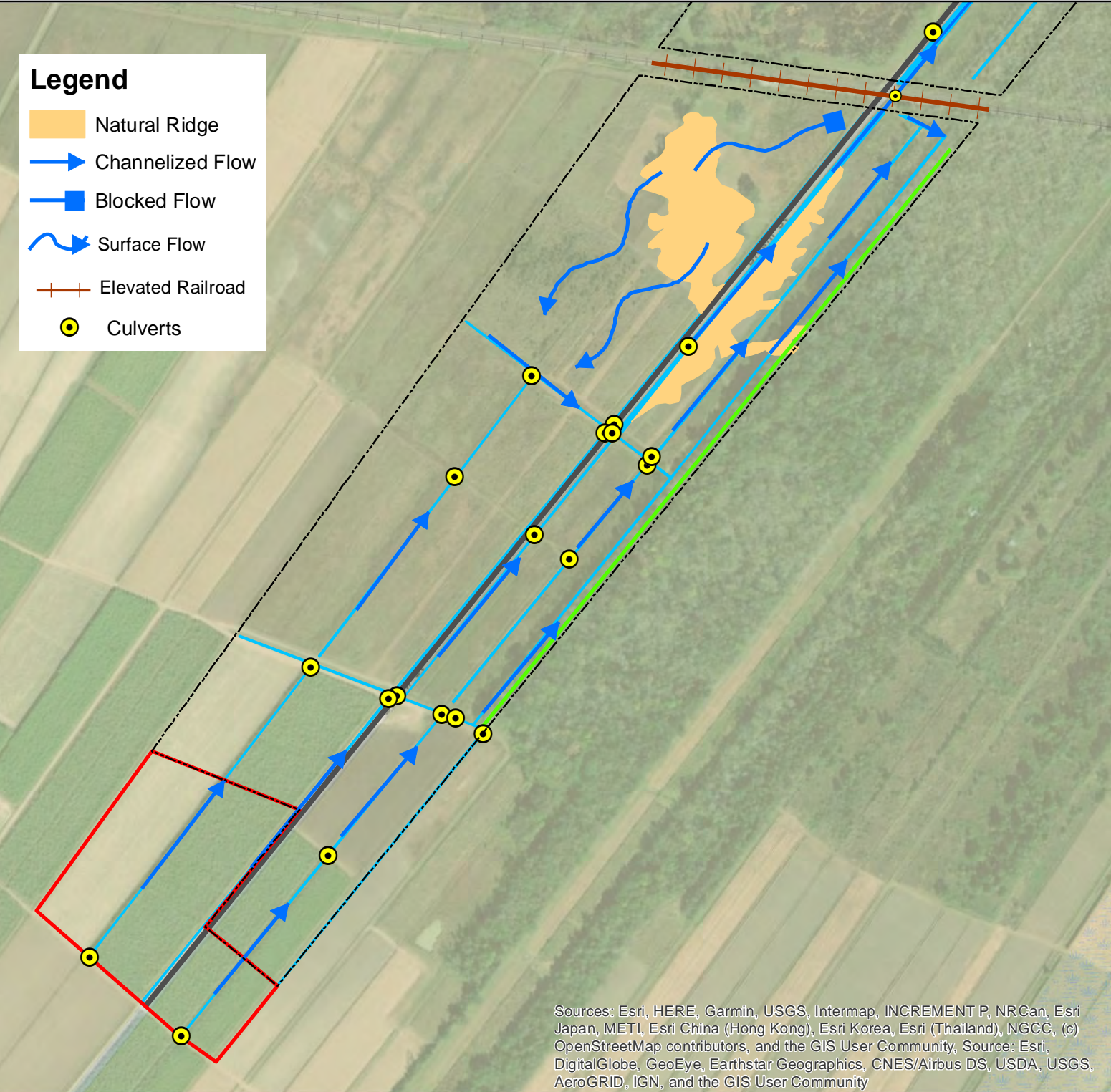
Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE C-3



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

BMB Boundary (231.1 acres)

BMB Addendum Areas 1 & 2 (58.9 acres)

Pre Mitigation Waterways

Berm to Remain

4502250450

Feet

Map Notes:

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

2. Map projected to NAD83 UTM Zone 15.

4. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

CURRENT HYDROLOGY: SOUTH

LAFOURCHE PARISH, LA

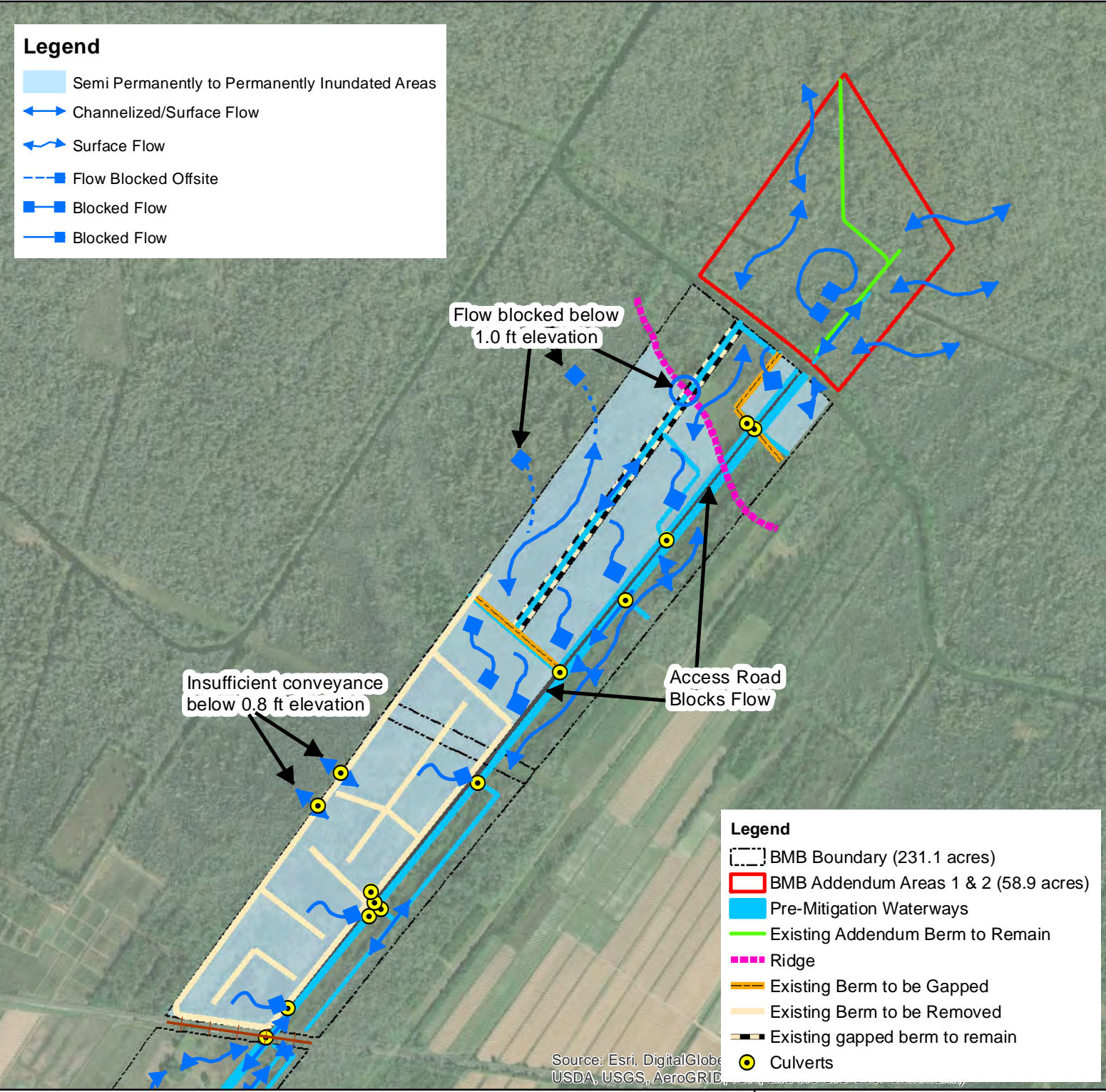
Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE C4



Map Notes:

- 1. The boundary shown is based on the boundary survey provided by the client.
- 2. Map projected to NAD83 UTM Zone 15.
- 4. BMB = Blouin Mitigation Bank

Raceland 330, LLC	
Des Allemands, LA	
CURRENT HYDROLOGY: NORTH	
LAFOURCHE PARISH, LA	
Created :	AGB/ArcView
Approved :	GLF
Date :	03/23/2020
Map No. :	
FIGURE C5	



Legend

- BMB Addendum Areas 1 & 2 (58.9 acres)
- BMB Boundary (231.1 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

ELEVATION MAP

LAFOURCHE PARISH, LA

Created : AGB/ArcView

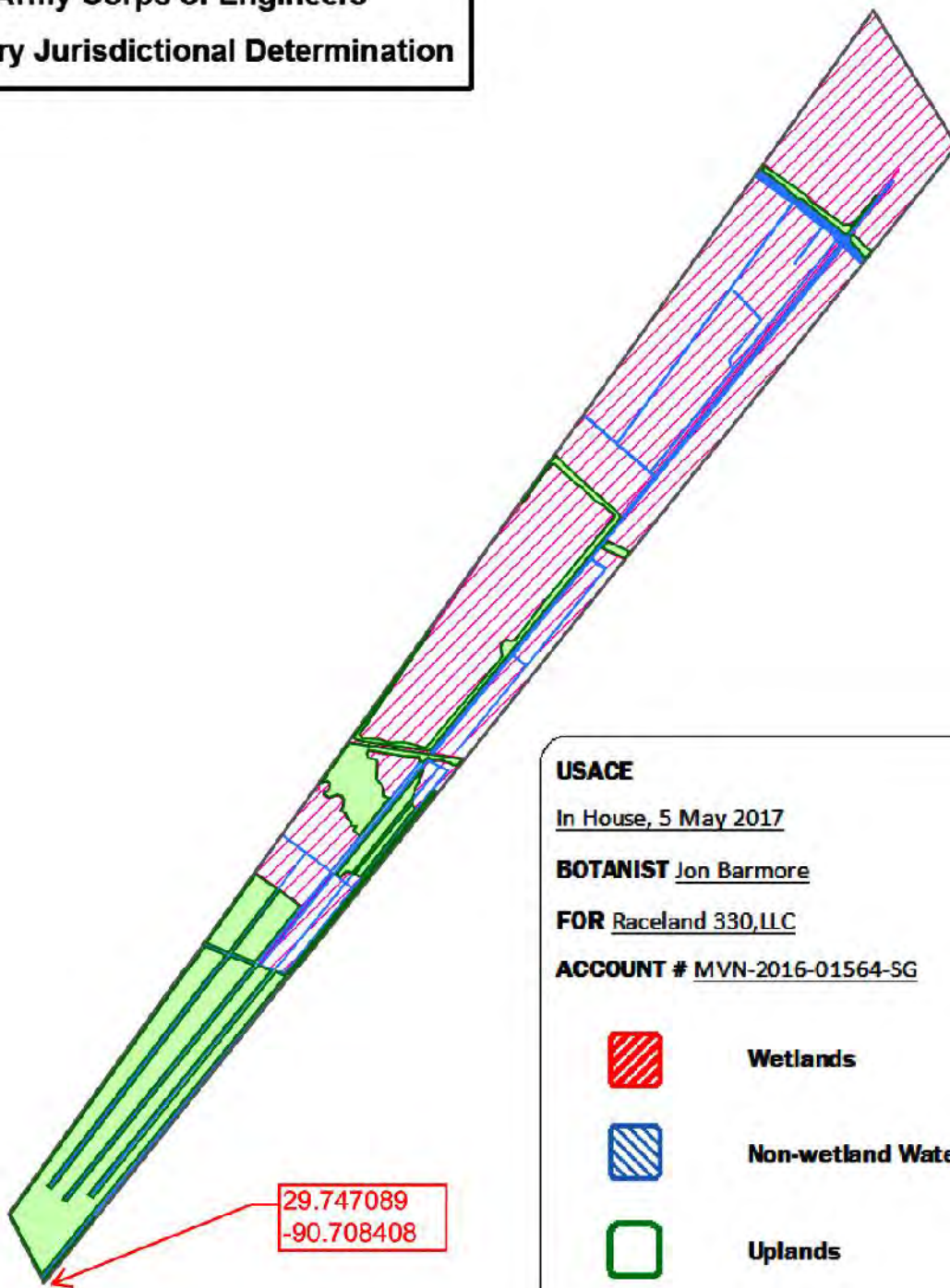
Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE C-6

US Army Corps of Engineers
Preliminary Jurisdictional Determination



USACE

In House, 5 May 2017

BOTANIST Jon Barmore

FOR Raceland 330, LLC

ACCOUNT # MVN-2016-01564-SG



Wetlands



Non-wetland Waters



Uplands



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

WETLAND MAP

LAFOURCHE PARISH, LA

Created : AGB/ArcView


Approved : GLF

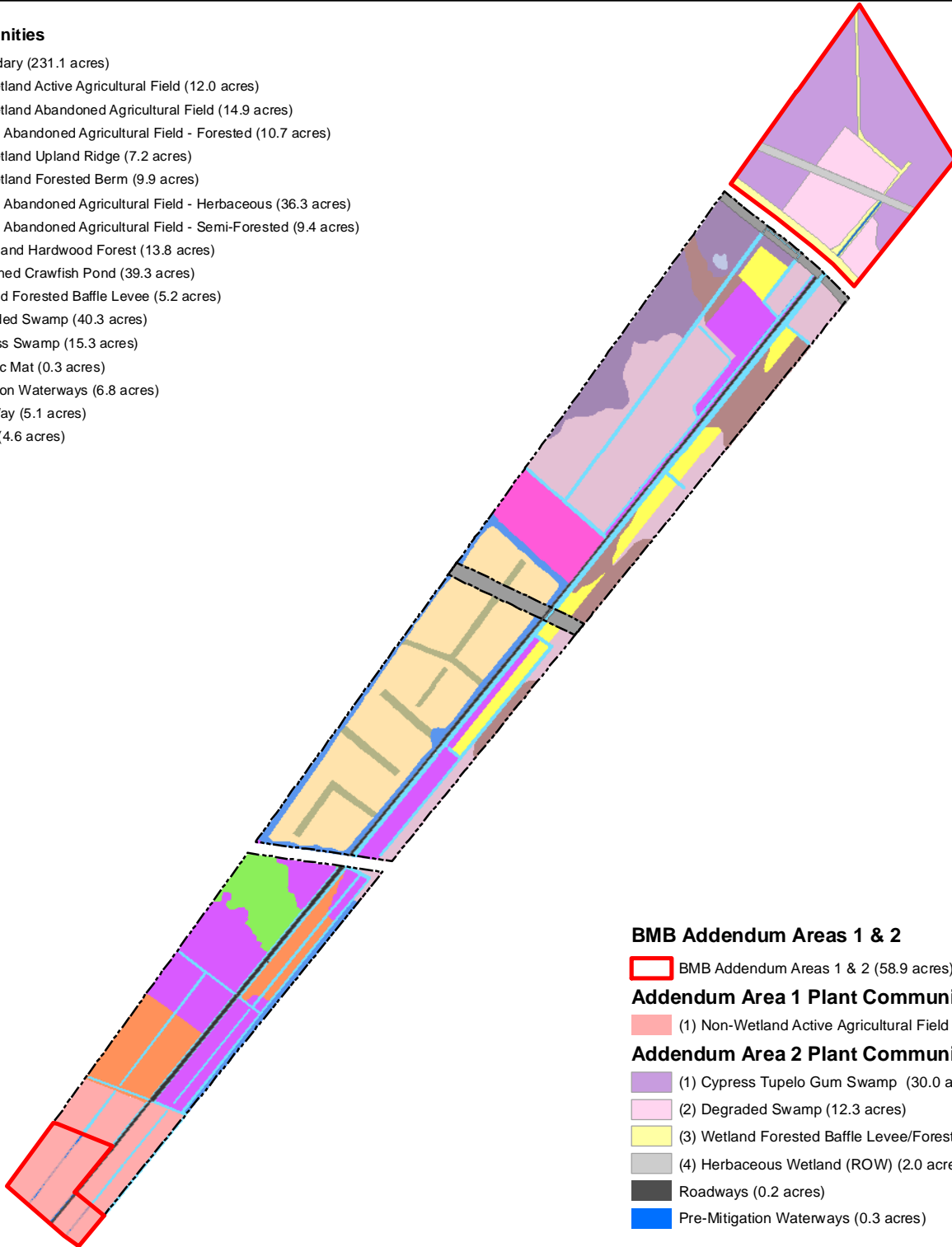
Date : 03/23/2020

Map No. :

FIGURE C-7

Plant Communities


-  BMB Boundary (231.1 acres)
-  (1) Non-Wetland Active Agricultural Field (12.0 acres)
-  (2) Non-Wetland Abandoned Agricultural Field (14.9 acres)
-  (3) Wetland Abandoned Agricultural Field - Forested (10.7 acres)
-  (4) Non-Wetland Upland Ridge (7.2 acres)
-  (5) Non-Wetland Forested Berm (9.9 acres)
-  (6) Wetland Abandoned Agricultural Field - Herbaceous (36.3 acres)
-  (7) Wetland Abandoned Agricultural Field - Semi-Forested (9.4 acres)
-  (8) Bottomland Hardwood Forest (13.8 acres)
-  (9) Abandoned Crawfish Pond (39.3 acres)
-  (10) Wetland Forested Baffle Levee (5.2 acres)
-  (11) Degraded Swamp (40.3 acres)
-  (12) Cypress Swamp (15.3 acres)
-  (13) Organic Mat (0.3 acres)
-  Pre-Mitigation Waterways (6.8 acres)
-  Rights of Way (5.1 acres)
-  Roadways (4.6 acres)



BMB Addendum Areas 1 & 2

-  BMB Addendum Areas 1 & 2 (58.9 acres)



Addendum Area 1 Plant Communities

-  (1) Non-Wetland Active Agricultural Field (Sugarcane) (10.1 acres)

Addendum Area 2 Plant Communities

-  (1) Cypress Tupelo Gum Swamp (30.0 acres)
-  (2) Degraded Swamp (12.3 acres)
-  (3) Wetland Forested Baffle Levee/Forested Spoilbank (4.0 acres)
-  (4) Herbaceous Wetland (ROW) (2.0 acres)
-  Roadways (0.2 acres)
-  Pre-Mitigation Waterways (0.3 acres)

Legend

-  BMB Addendum Areas 1 & 2 (58.9 acres)
-  BMB Boundary (231.1 acres)

1,300 650 0 1,300 Feet



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

PLANT COMMUNITIES

LAFOURCHE PARISH, LA

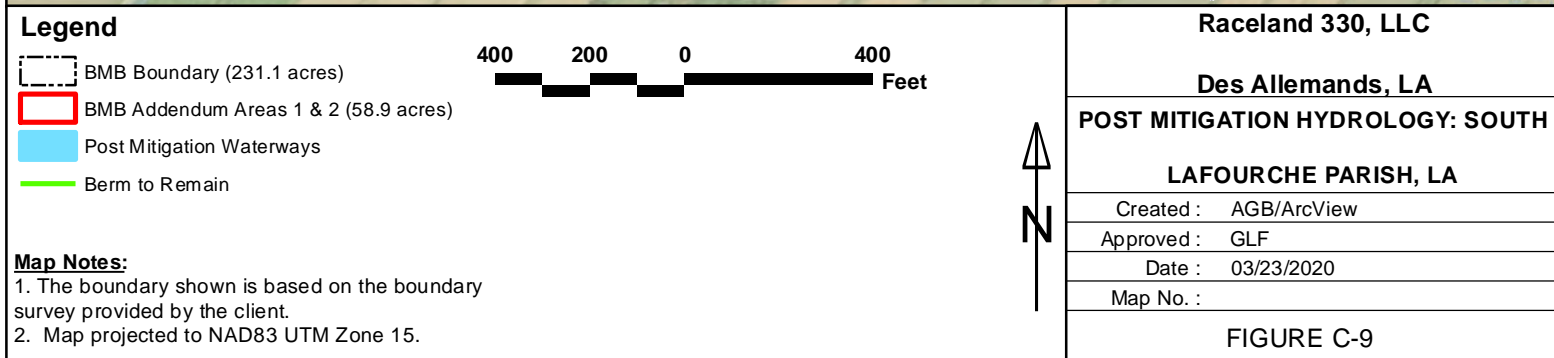
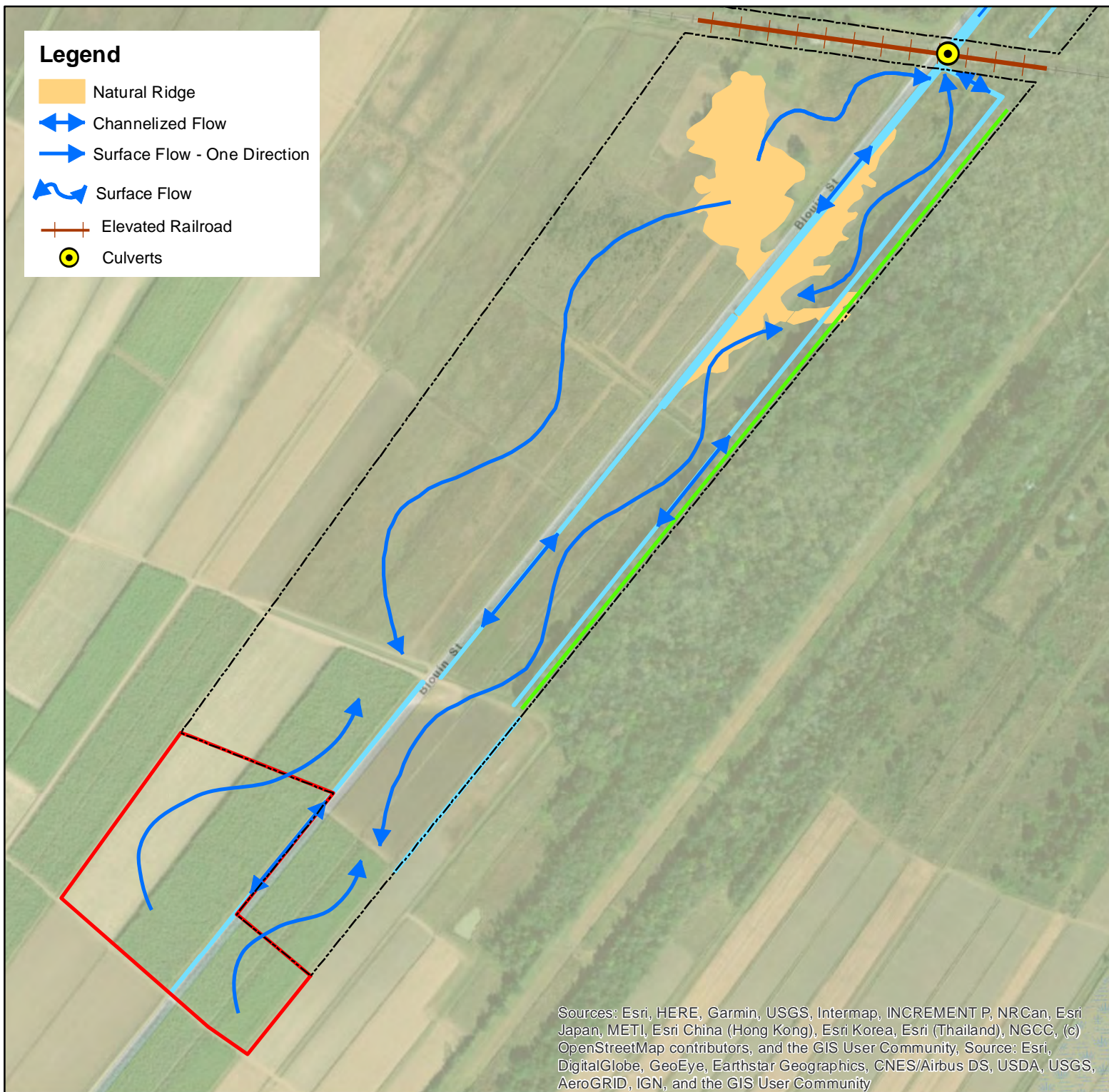
Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE C-8



Legend

- Post Mitigation Waterways
- Existing Addendum Berm to Remain
- Ridge
- Existing gapped berm to remain
- Post mitigation gapped berm
- ↔ Surface Flow
- Blocked Flow
- Flow Blocked offsite

Flow blocked below
1.0 ft elevation

Flow allowed below
1.0 ft elevation

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Culverts to Remain

750 375 0 750
Feet

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

POST MITIGATION HYDROLOGY: NORTH

LAFOURCHE PARISH, LA

Created : AGB/ArcView

Approved : GLF

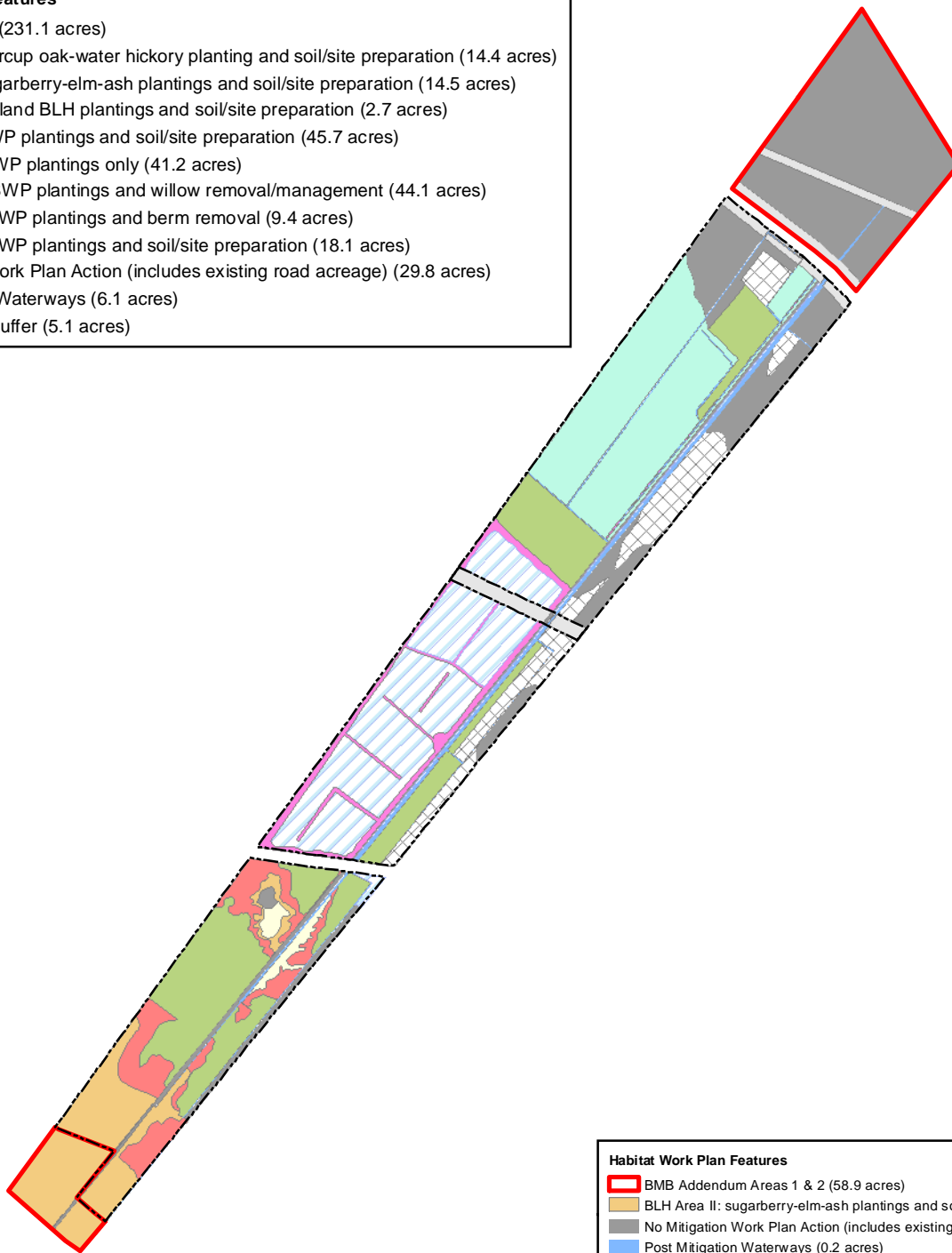
Date : 03/23/2020

Map No. :

FIGURE C-10

Habitat Work Plan Features

- BMB Boundary (231.1 acres)
- BLH Area I: overcup oak-water hickory planting and soil/site preparation (14.4 acres)
- BLH Area II: sugarberry-elm-ash plantings and soil/site preparation (14.5 acres)
- BLH Area III: upland BLH plantings and soil/site preparation (2.7 acres)
- SWP Area I: SWP plantings and soil/site preparation (45.7 acres)
- SWP Area II: SWP plantings only (41.2 acres)
- SWP Area III: SWP plantings and willow removal/management (44.1 acres)
- SWP Area IV: SWP plantings and berm removal (9.4 acres)
- SWP Area V: SWP plantings and soil/site preparation (18.1 acres)
- No Mitigation Work Plan Action (includes existing road acreage) (29.8 acres)
- Post Mitigation Waterways (6.1 acres)
- Rights of Way/Buffer (5.1 acres)



Habitat Work Plan Features

- BMB Addendum Areas 1 & 2 (58.9 acres)
- BLH Area II: sugarberry-elm-ash plantings and soil/site preparation (10.2 acres)
- No Mitigation Work Plan Action (includes existing road acreage) (44.2 acres)
- Post Mitigation Waterways (0.2 acres)
- Rights of Way/Buffer (4.3 acres)

Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. SWP= Swamp
4. BLH= Bottomland Hardwood
5. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

HABITAT WORK PLAN

LAFOURCHE PARISH, LA

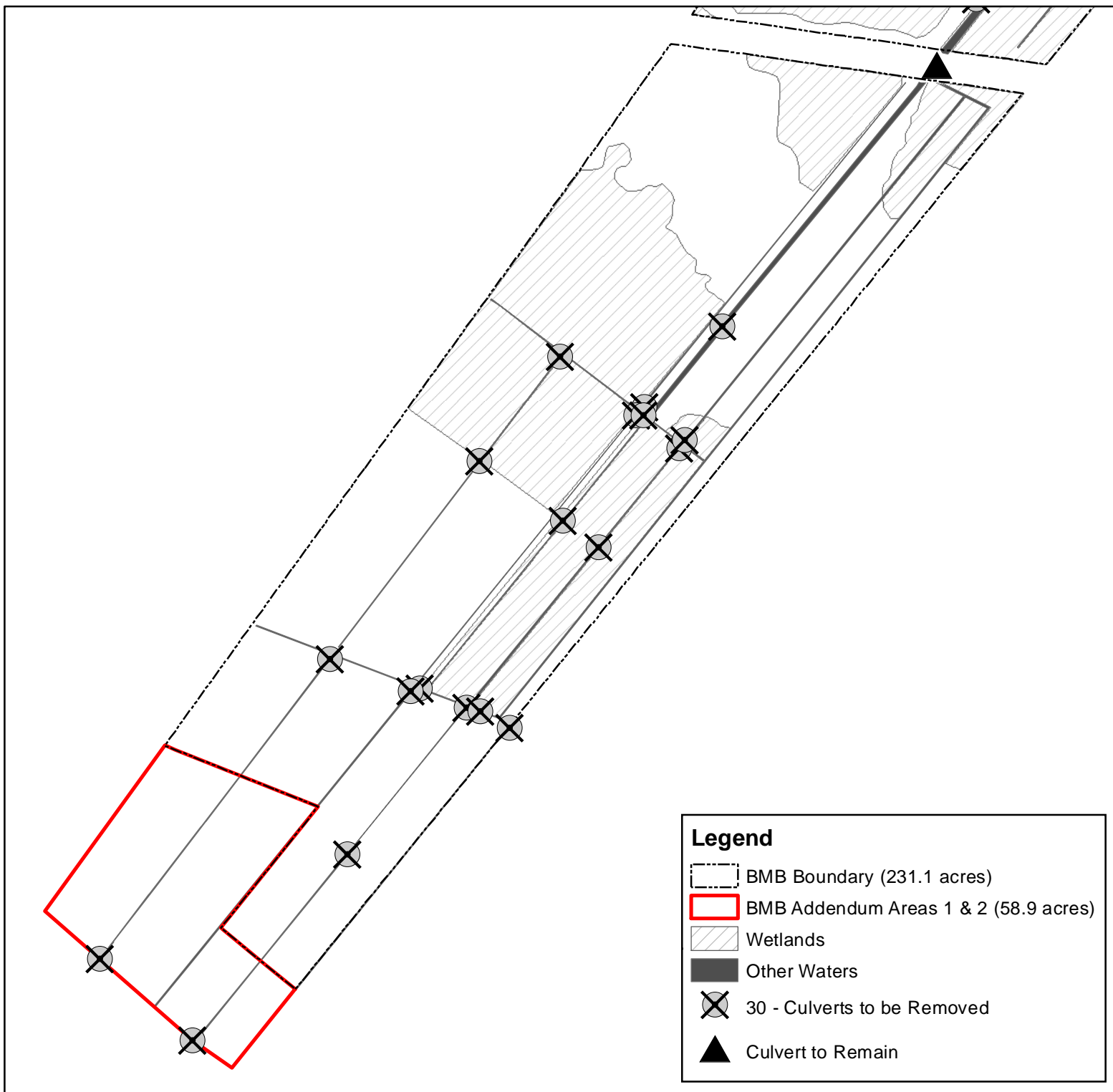
Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE C-11



400 200 0 400 Feet



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.

Raceland 330, LLC

Des Allemands, LA

CULVERT FIGURE

LAFOURCHE PARISH, LA

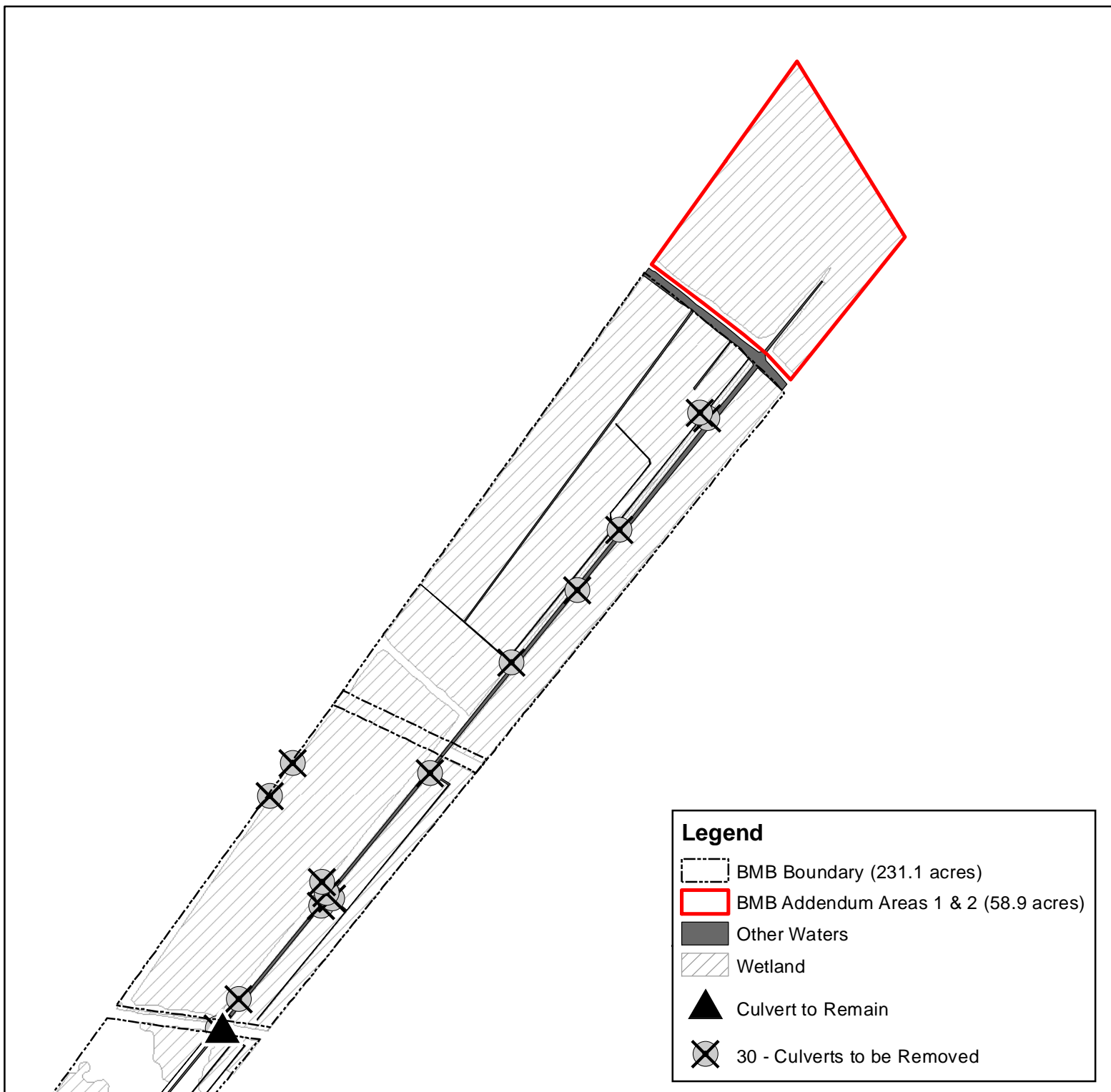
Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

Map No. :

FIGURE C-12



Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Other Waters
- Wetland
- Culvert to Remain
- X 30 - Culverts to be Removed

1,000 500 0 1,000 Feet



Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.

Raceland 330, LLC

Des Allemands, LA

CULVERT FIGURE

LAFOURCHE PARISH, LA

Created : AGB/ArcView

Approved :

Date : 03/23/2020

Map No. :

FIGURE C-13

Legend

--- BMB Boundary (231.1 acres)

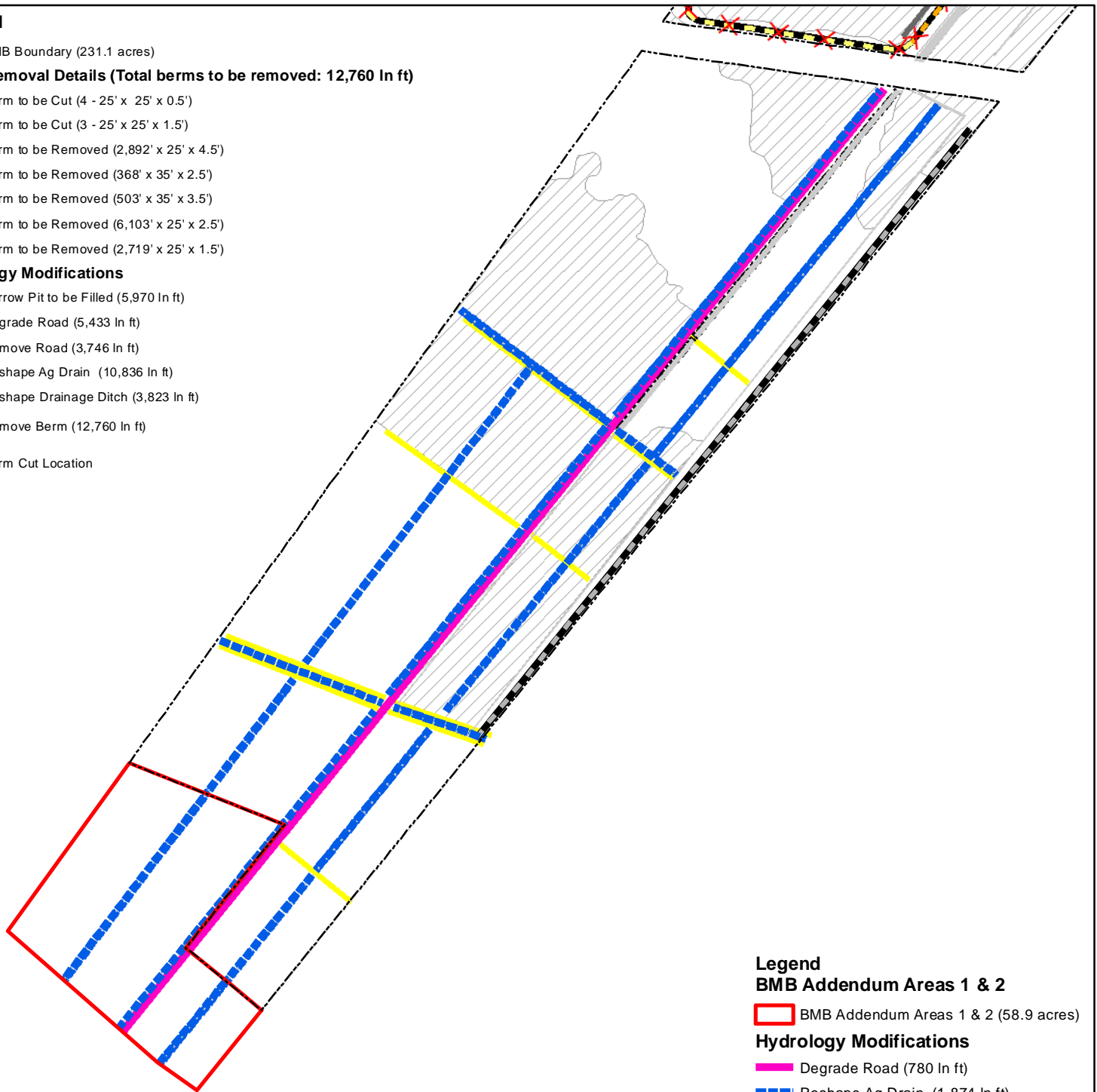
Berm Removal Details (Total berms to be removed: 12,760 In ft)

- Berm to be Cut (4 - 25' x 25' x 0.5')
- Berm to be Cut (3 - 25' x 25' x 1.5')
- Berm to be Removed (2,892' x 25' x 4.5')
- Berm to be Removed (368' x 35' x 2.5')
- Berm to be Removed (503' x 35' x 3.5')
- Berm to be Removed (6,103' x 25' x 2.5')
- Berm to be Removed (2,719' x 25' x 1.5')

Hydrology Modifications

- Borrow Pit to be Filled (5,970 In ft)
- Degrade Road (5,433 In ft)
- Remove Road (3,746 In ft)
- Reshape Ag Drain (10,836 In ft)
- Reshape Drainage Ditch (3,823 In ft)
- ✗ Remove Berm (12,760 In ft)

✚ Berm Cut Location



Legend

BMB Addendum Areas 1 & 2

■ BMB Addendum Areas 1 & 2 (58.9 acres)

Hydrology Modifications

- Degrade Road (780 In ft)
- Reshape Ag Drain (1,874 In ft)
- Existing berm to remain

Legend

--- BMB Boundary (231.1 acres)

■ BMB Addendum Areas 1 & 2 (58.9 acres)

■ Existing Wetlands

■ Other Waters

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

450 225 0 450 Feet



Raceland 330, LLC

Des Allemands, LA

BERM AND ROAD DETAILS 1

LAFORCHE PARISH, LA

Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

Map No. :

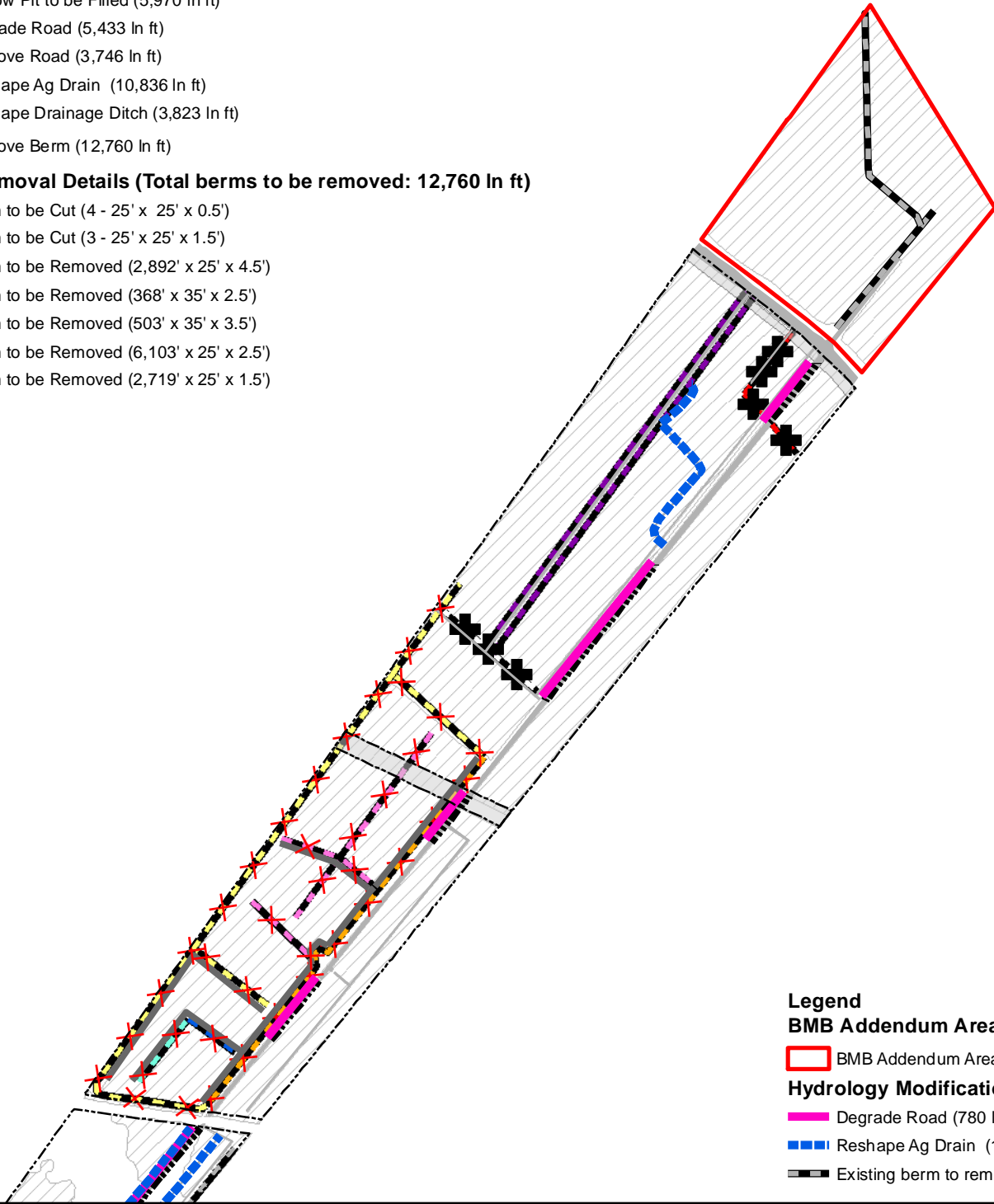
FIGURE C-14

Hydrology Modifications

- Borrow Pit to be Filled (5,970 In ft)
- Degrade Road (5,433 In ft)
- Remove Road (3,746 In ft)
- Reshape Ag Drain (10,836 In ft)
- Reshape Drainage Ditch (3,823 In ft)
- ✗ Remove Berm (12,760 In ft)

Berm Removal Details (Total berms to be removed: 12,760 In ft)

- Berm to be Cut (4 - 25' x 25' x 0.5')
- Berm to be Cut (3 - 25' x 25' x 1.5')
- Berm to be Removed (2,892' x 25' x 4.5')
- Berm to be Removed (368' x 35' x 2.5')
- Berm to be Removed (503' x 35' x 3.5')
- Berm to be Removed (6,103' x 25' x 2.5')
- Berm to be Removed (2,719' x 25' x 1.5')



Legend

BMB Addendum Areas 1 & 2

- BMB Addendum Areas 1 & 2 (58.9 acres)

Hydrology Modifications

- Degrade Road (780 In ft)
- Reshape Ag Drain (1,874 In ft)
- Existing berm to remain

Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Other Waters
- Existing Wetlands

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
4. BMB = Blouin Mitigation Bank

1,000 500 0 1,000 Feet



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BERM AND ROAD DETAIL 2

LAFORCHE PARISH, LA

Created : AGB/ArcView

Approved : GLF

Date : 03/23/2020

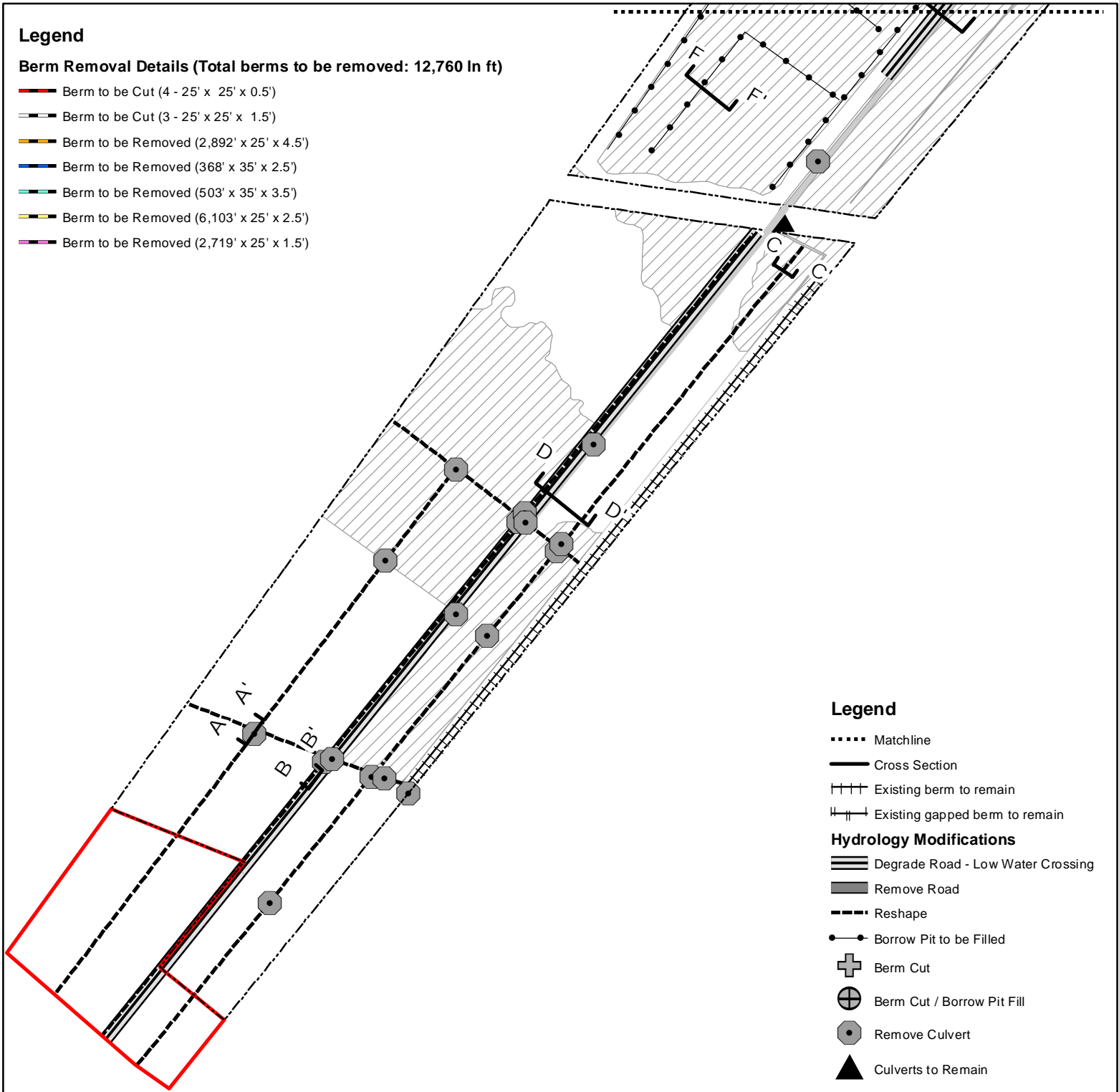
Map No. :

FIGURE C-15

Legend

Berm Removal Details (Total berms to be removed: 12,760 In ft)

- Berm to be Cut (4 - 25' x 25' x 0.5')
- Berm to be Cut (3 - 25' x 25' x 1.5')
- Berm to be Removed (2,892' x 25' x 4.5')
- Berm to be Removed (368' x 35' x 2.5')
- Berm to be Removed (503' x 35' x 3.5')
- Berm to be Removed (6,103' x 25' x 2.5')
- Berm to be Removed (2,719' x 25' x 1.5')



Legend

- - - - Matchline
- Cross Section
- + + + + Existing berm to remain
- + + + + Existing gapped berm to remain
- Hydrology Modifications**
- = = = = Degrade Road - Low Water Crossing
- = = = = Remove Road
- - - - Reshape
- Borrow Pit to be Filled
- + Berm Cut
- ⊕ Berm Cut / Borrow Pit Fill
- ⊗ Remove Culvert
- ▲ Culverts to Remain

Legend

- - - - BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- / / / / Existing Wetlands
- Pre-Mitigation Waterways

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank

500 250 0 500 Feet



Raceland 330, LLC

Des Allemands, LA

CROSS SECTIONS

LAFORCHE PARISH, LA

Created : AGB/ArcView

Approved :

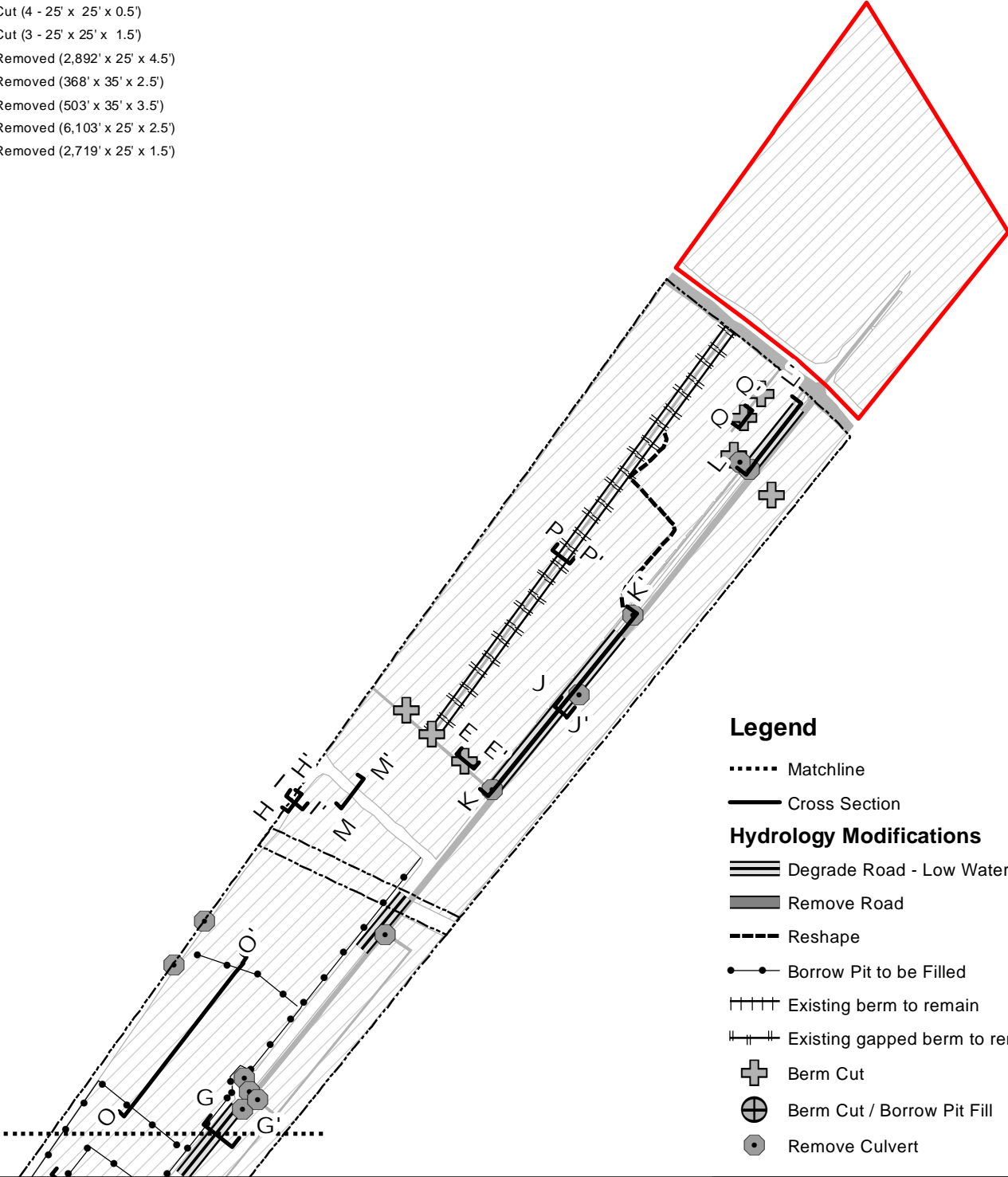
Date : 03/23/2020

Map No. :

FIGURE C-16

Berm Removal Details (Total berms to be removed: 12,760 ln ft)

- Berm to be Cut (4 - 25' x 25' x 0.5')
- Berm to be Cut (3 - 25' x 25' x 1.5')
- Berm to be Removed (2,892' x 25' x 4.5')
- Berm to be Removed (368' x 35' x 2.5')
- Berm to be Removed (503' x 35' x 3.5')
- Berm to be Removed (6,103' x 25' x 2.5')
- Berm to be Removed (2,719' x 25' x 1.5')



Legend

- Matchline
- Cross Section
- Hydrology Modifications**
- Degrade Road - Low Water Crossing
- Remove Road
- Reshape
- Borrow Pit to be Filled
- Existing berm to remain
- Existing gapped berm to remain
- Berm Cut
- Berm Cut / Borrow Pit Fill
- Remove Culvert

Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Existing Wetlands
- Existing Other Waters



Map Notes:

- The boundary shown is based on the boundary survey provided by the client.
- Map projected to NAD83 UTM Zone 15.
- BMB = Blouin Mitigation Bank

Raceland 330, LLC

Des Allemands, LA

CROSS SECTIONS 2

LAFOURCHE PARISH, LA

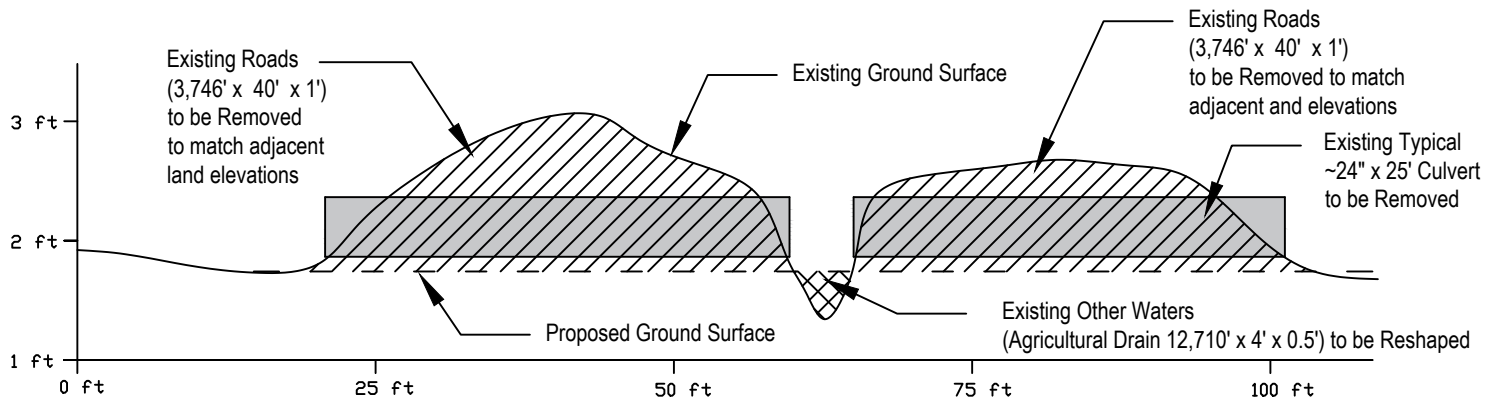
Created : AGB/ArcView

Approved :

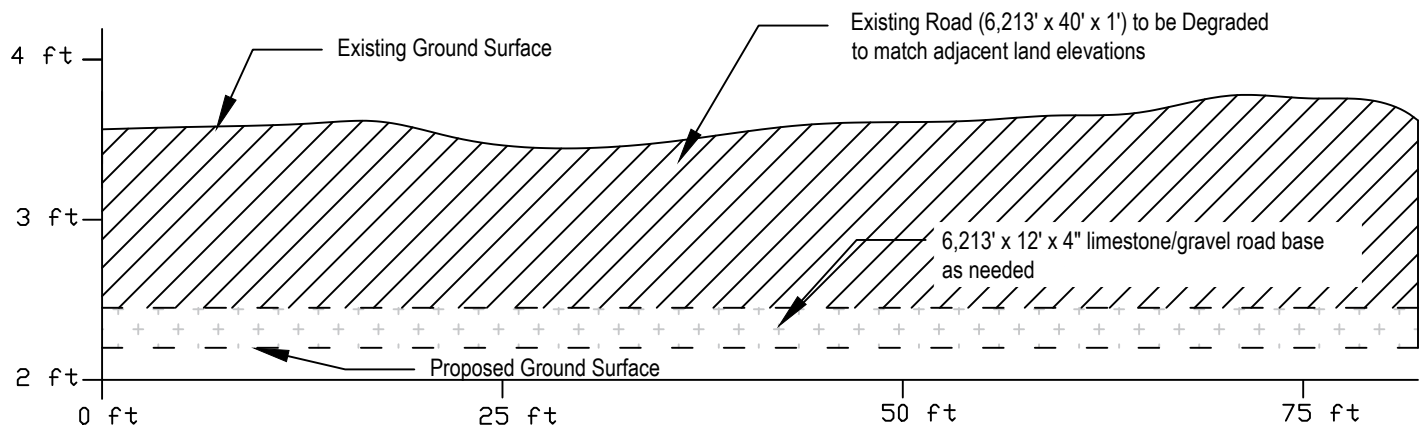
Date : 03/23/2020

Map No. :

FIGURE C-17



Section A-A': Existing Roadway to be Degraded and Culverts to be Removed
10:1 Vertical Exaggeration



Section B-B': Existing Roadway to be Degraded
10:1 Vertical Exaggeration



Fill



Excavation

Note: Excess fill generated from excavation will be deposited in a non-wetland location. (See Figure E-27)



Raceland 330, LLC

Thibodaux, LA
CROSS SECTIONS A & B

LAFOURCHE PARISH, LA

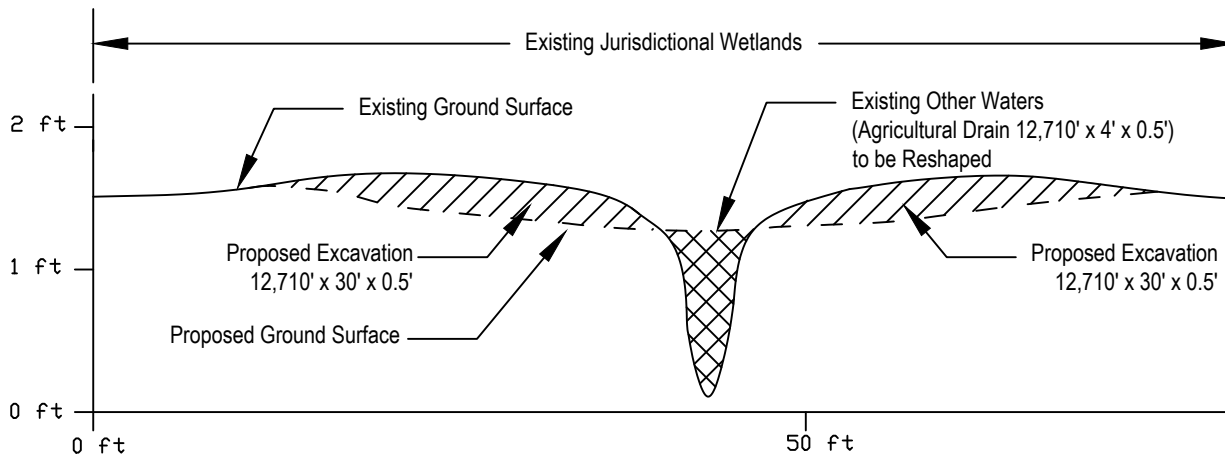
Created: AGB

Approved: GLF

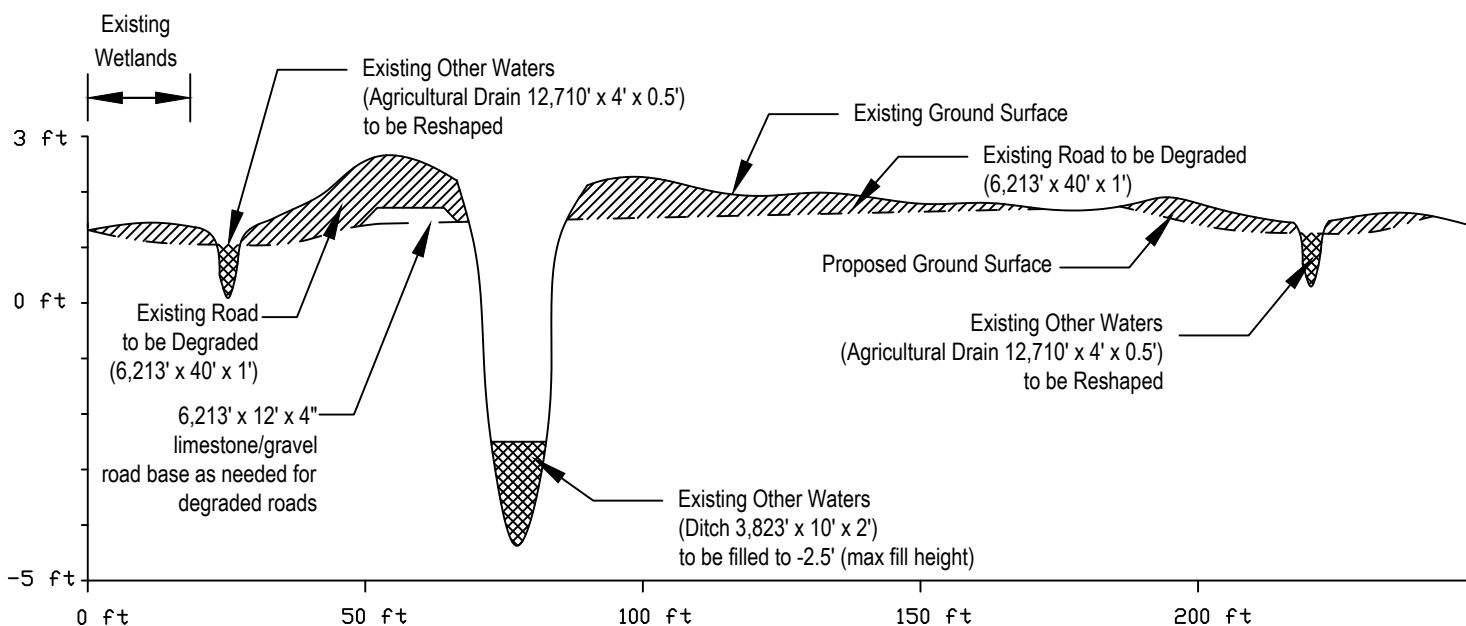
Date: 03/23/2020

Map No.:

FIGURE C-18



Section C-C': Existing Agricultural Drain to be Reshaped
10:1 Vertical Exaggeration



Section D-D': Existing Road to be Degraded and Agricultural Ditches to be Reshaped
10:1 Vertical Exaggeration



Fill



Excavation

\\G:\Bike - Natural Resource Professionals\working



Raceland 330, LLC

Thibodaux, LA

CROSS SECTIONS C & D

LAFOURCHE PARISH, LA

Created: AGB

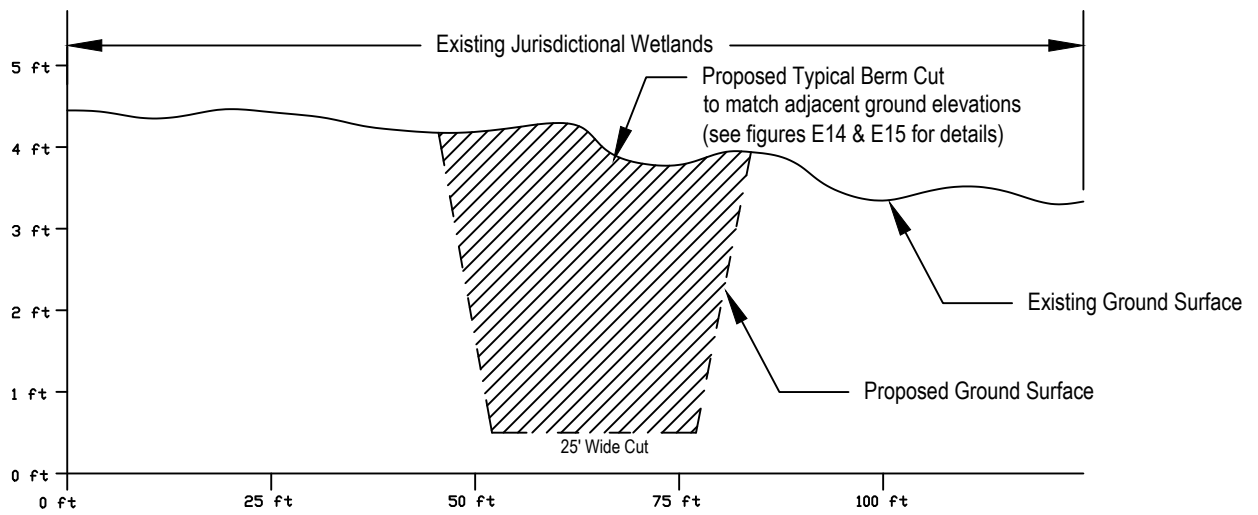
Approved: GLF

Date: 03/23/2020

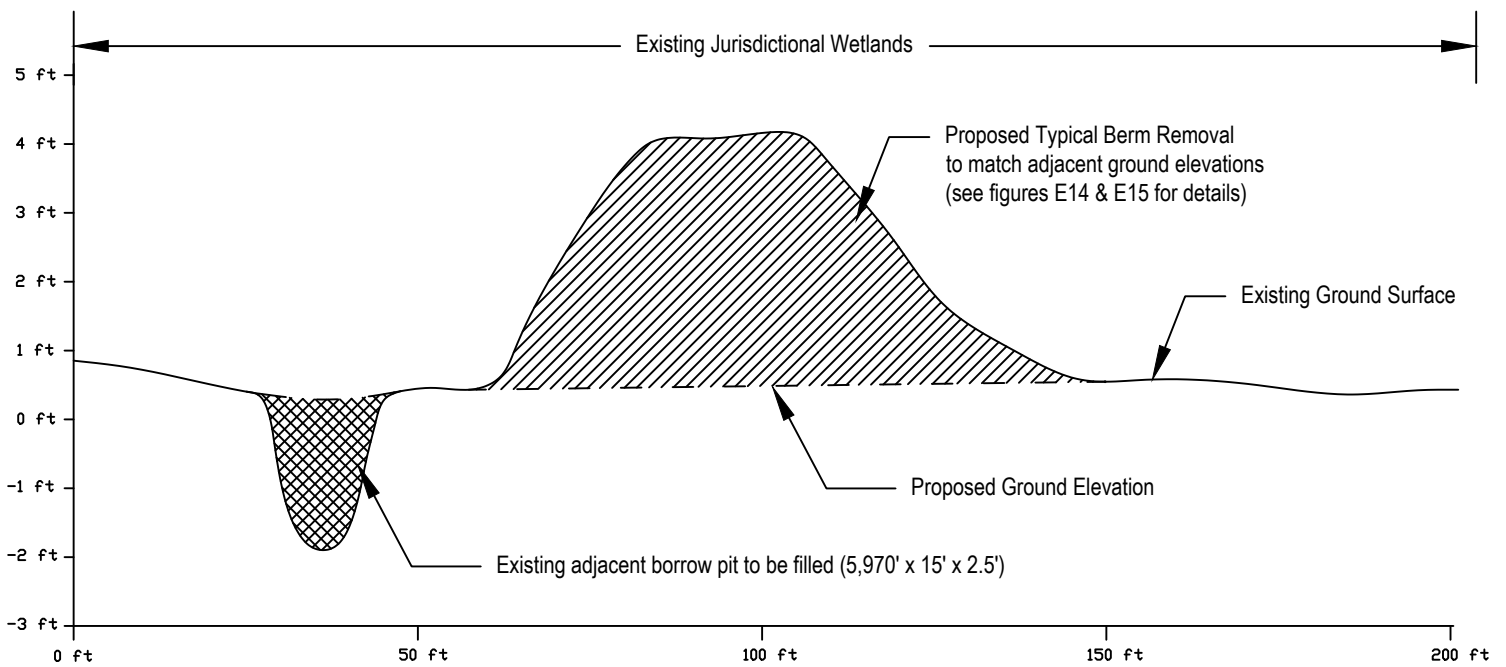
Map No.:

FIGURE C-19

Note: Excess fill generated from excavation will be deposited in a non-wetland location. (See Figure E-27)



Section E-E': Typical Existing Berm to be Cut
10:1 Vertical Exaggeration



Section F-F': Existing Berm to be Removed adjacent to Borrow Pit to be filled
10:1 Vertical Exaggeration



Fill



Excavation

AAA/BBB/CCC - Natural Resource Professionals/Version



Note: Excess fill generated from excavation
will be deposited in a non-wetland location.
(See Figure E-27)

Raceland 330, LLC

Thibodaux, LA

CROSS SECTIONS E & F

LAFOURCHE PARISH, LA

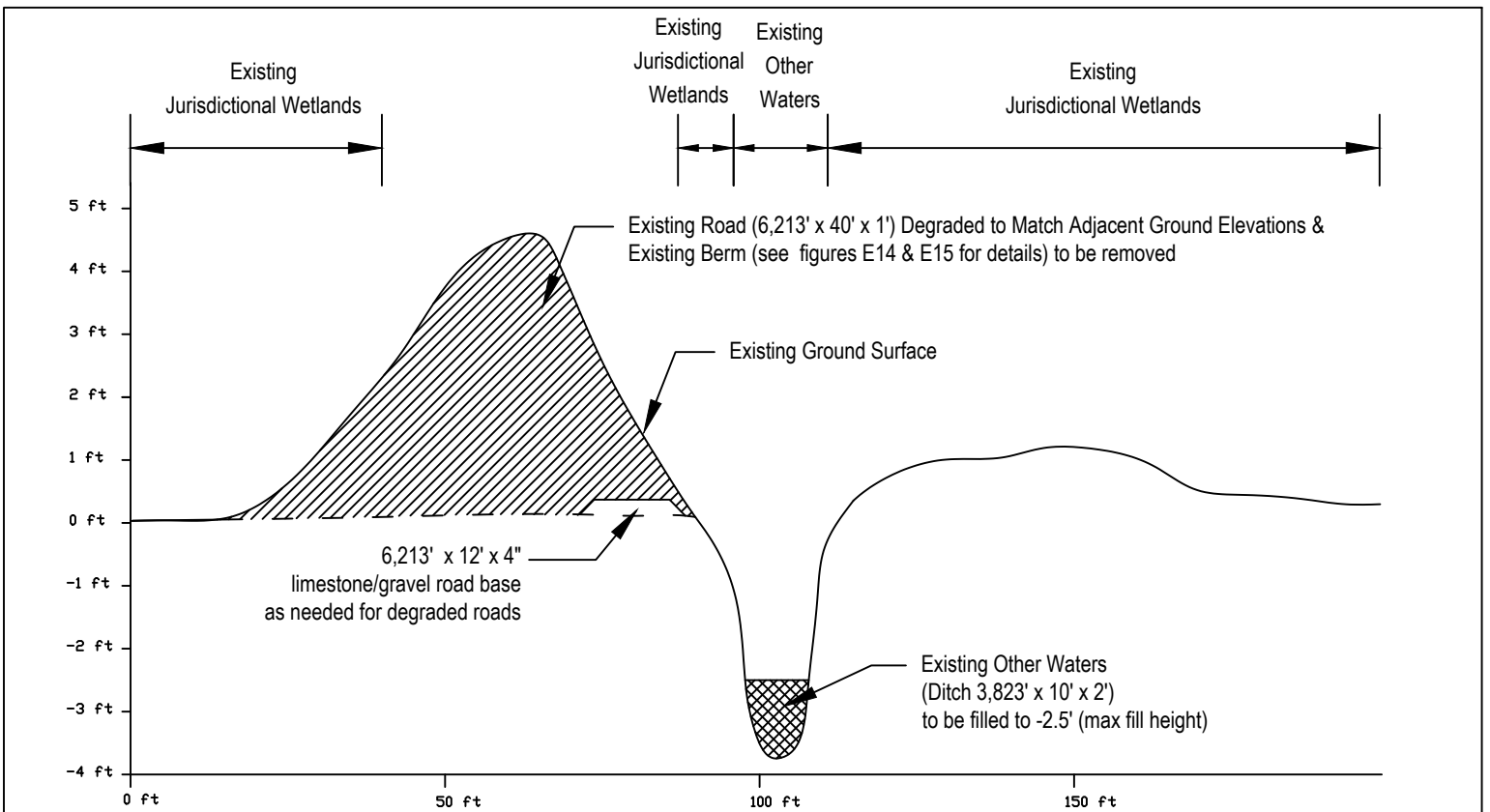
Created: AGB

Approved: GLF

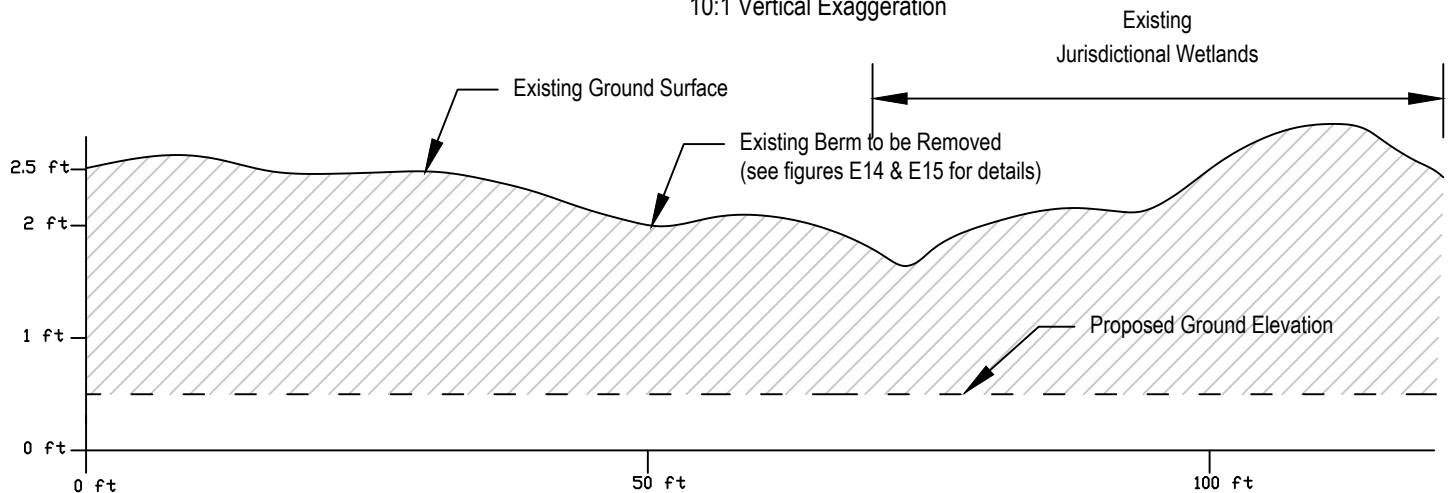
Date: 03/23/2020

Map No.:

FIGURE C-20



Section G-G': Existing Berm to be Cut / Road to be Removed
10:1 Vertical Exaggeration



Section H-H': Existing Berm to be Cut
10:1 Vertical Exaggeration



Fill



Excavation

Note: Excess fill generated from excavation will be deposited in a non-wetland location. (See Figure E-27)



Raceland 330, LLC

Thibodaux, LA
CROSS SECTIONS G & H

LAFORCHE PARISH, LA

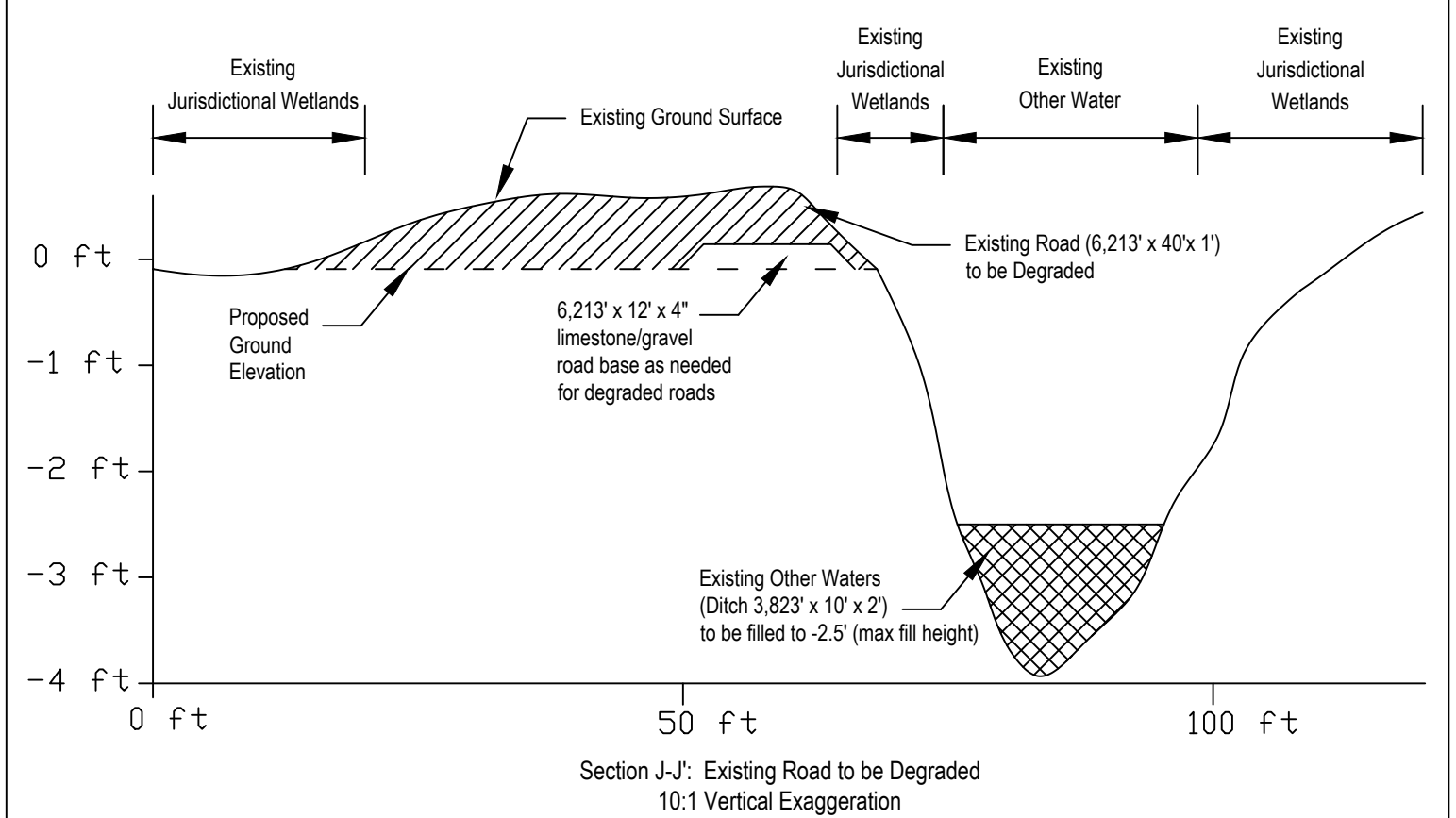
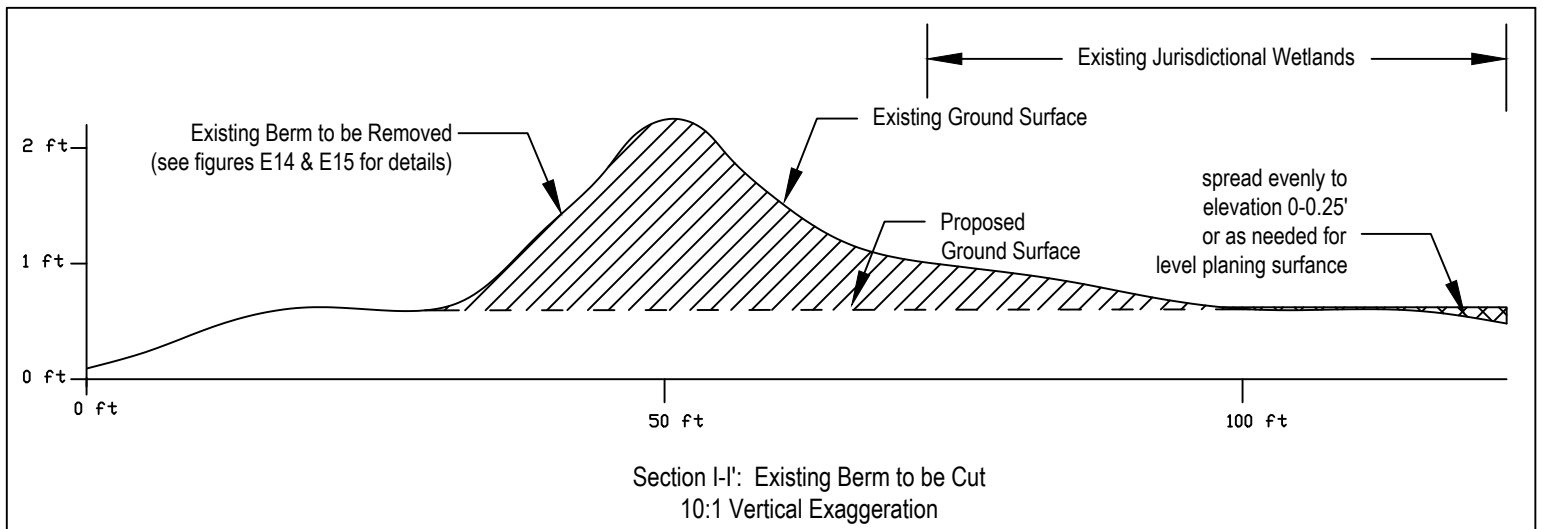
Created: AGB


Approved: GLF


Date: 03/23/2020

Map No.:

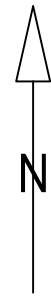
FIGURE C-21



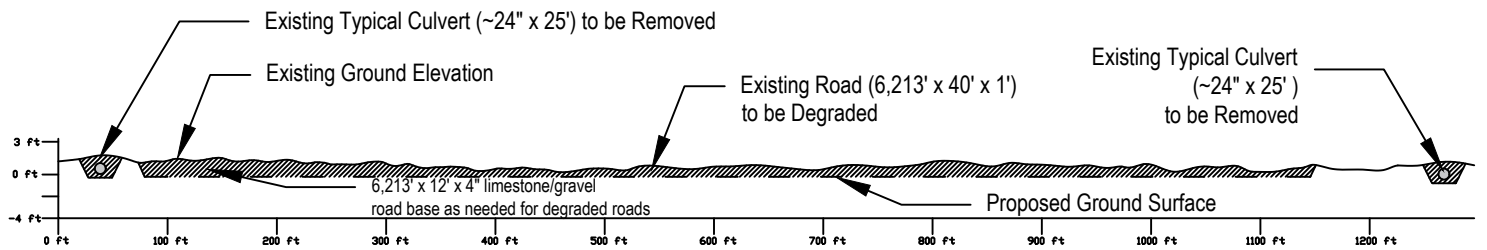
 Fill

 Excavation

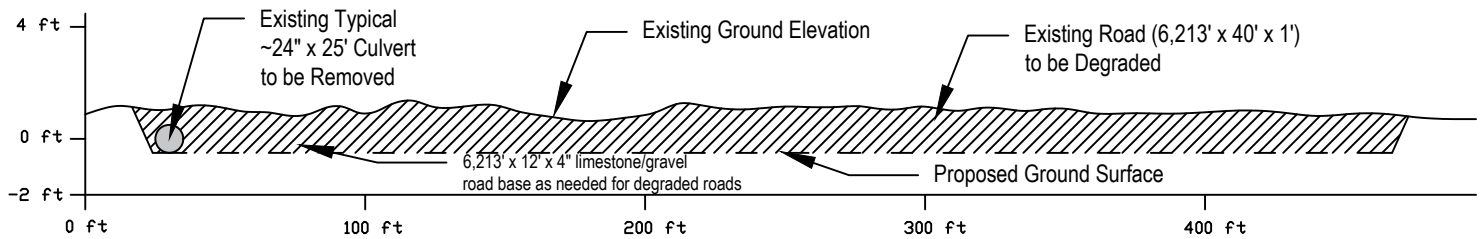
Note: Excess fill generated from excavation will be deposited in a non-wetland location. (See Figure E-27)



Raceland 330, LLC	
Thibodaux, LA	
CROSS SECTIONS I & J	
LAFOURCHE PARISH, LA	
Created:	AGB
Approved:	GLF
Date:	03/23/2020
Map No.:	
FIGURE C-22	



Section K-K': Existing Road to be Degraded
10:1 Vertical Exaggeration



Section L-L': Existing Culvert to be Removed / Road to be Degraded
10:1 Vertical Exaggeration



Fill



Excavation

\\sbs\drive - Natural Resource Professionals\morgans



Raceland 330, LLC

Thibodaux, LA

CROSS SECTIONS K & L

LAFOURCHE PARISH, LA

Created: AGB

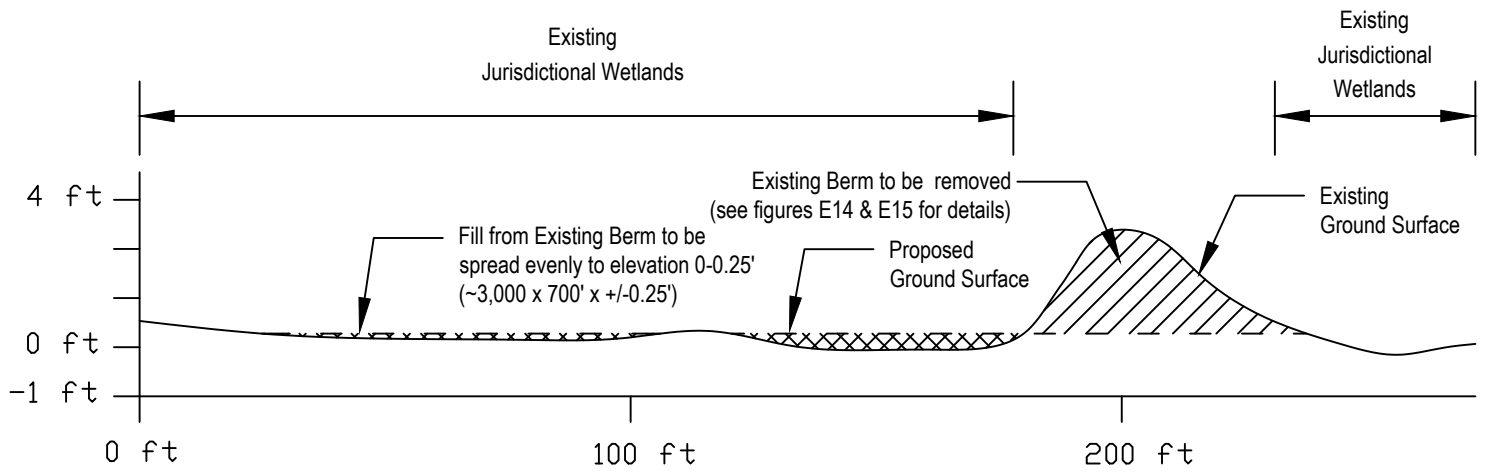
Approved: GLF

Date: 03/23/2020

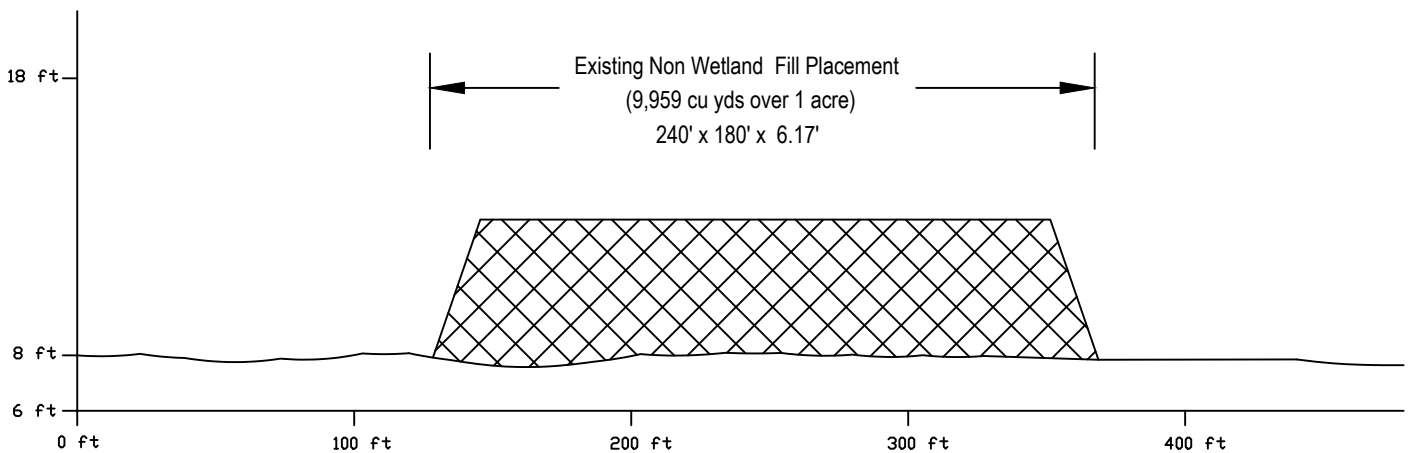
Map No.:

FIGURE C-23

Note: Excess fill generated from excavation
will be deposited in a non-wetland location.
(See Figure E-27)



Section M-M': Existing Berm to be Removed / Fill Placed within Existing Crawfish Pond
10:1 Vertical Exaggeration



Section N-N': Proposed Non-Wetland Fill Location
10:1 Vertical Exaggeration
See Figure E-21 for Cross Section Location



Fill



Excavation

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CROSS SECTIONS M & N

LAFOURCHE PARISH, LA

Created: AGB

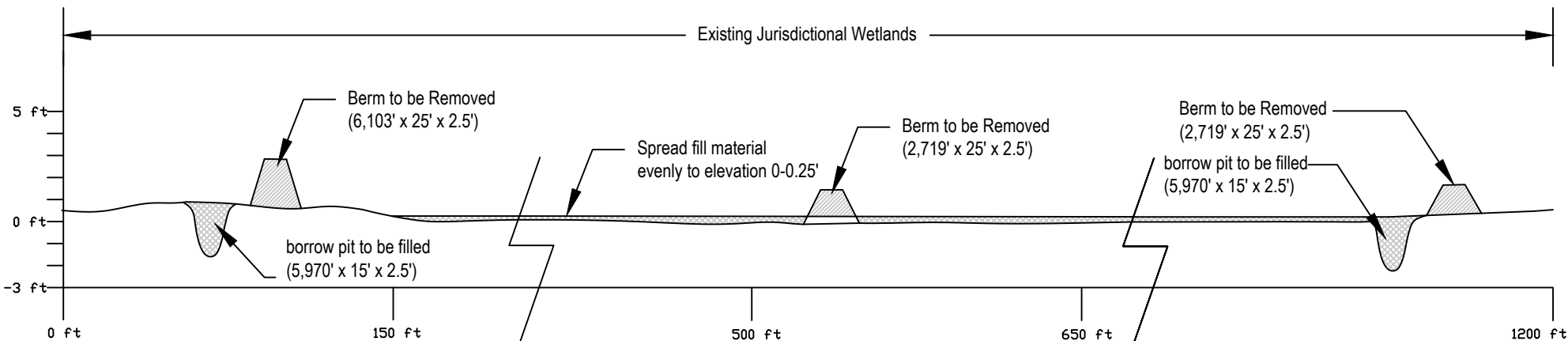
Approved: GLF

Date: 03/23/2020

Map No.:

FIGURE C-24

Note: Excess fill generated from excavation
will be deposited in a non-wetland location.
(See Figure E-27)



Section O-O': Existing Berm to be Removed / Fill Placed within Existing Crawfish Pond
10:1 Vertical Exaggeration



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Thibodaux, LA
CROSS SECTIONS O

LAFOURCHE PARISH, LA

Created: AGB

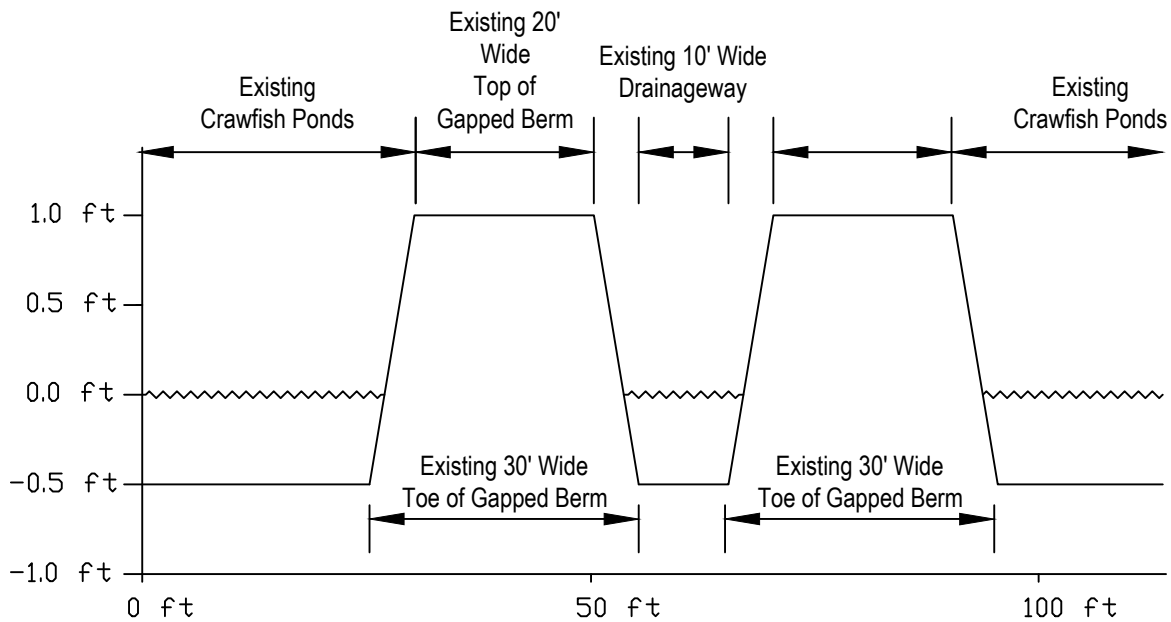
Approved: GLF

Date: 03/23/2020

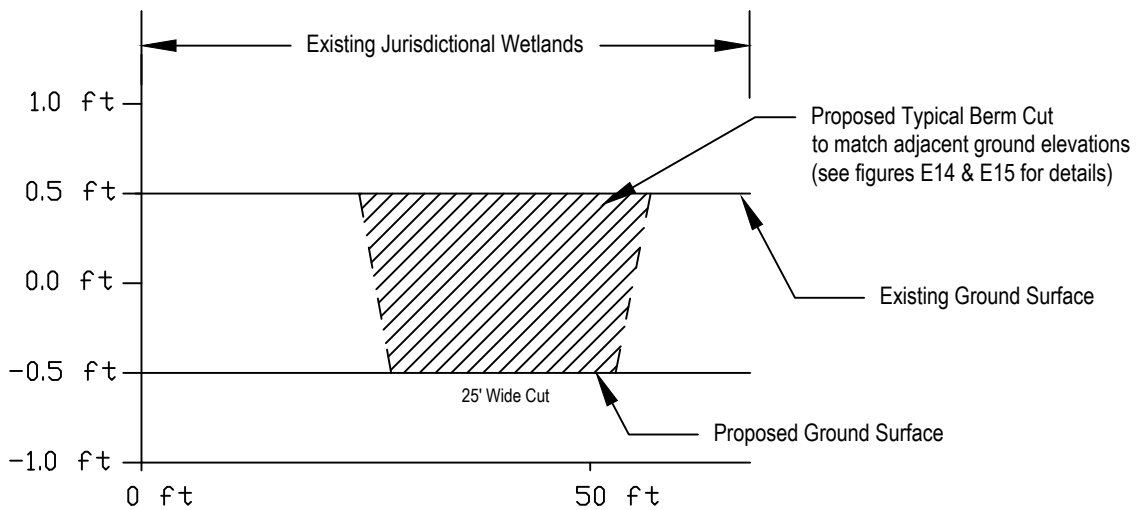
Map No.:

FIGURE C-25

Note: Excess fill generated from excavation
will be deposited in a non-wetland location.
(See Figure E-27)



Section P-P': Typical Existing Gapped Berm to Remain
20:1 Vertical Exaggeration
See Attachment MWP-A Figure 26 for Additional Details



Section Q-Q': Typical Existing Berm to be Cut
20:1 Vertical Exaggeration



\\Bulldoze - Natural Resource Professionals\wppg

Note: Excess fill generated from excavation will be deposited in a non-wetland location. (See Figure E-27)

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Thibodaux, LA
CROSS SECTIONS P

LAFORCHE PARISH, LA

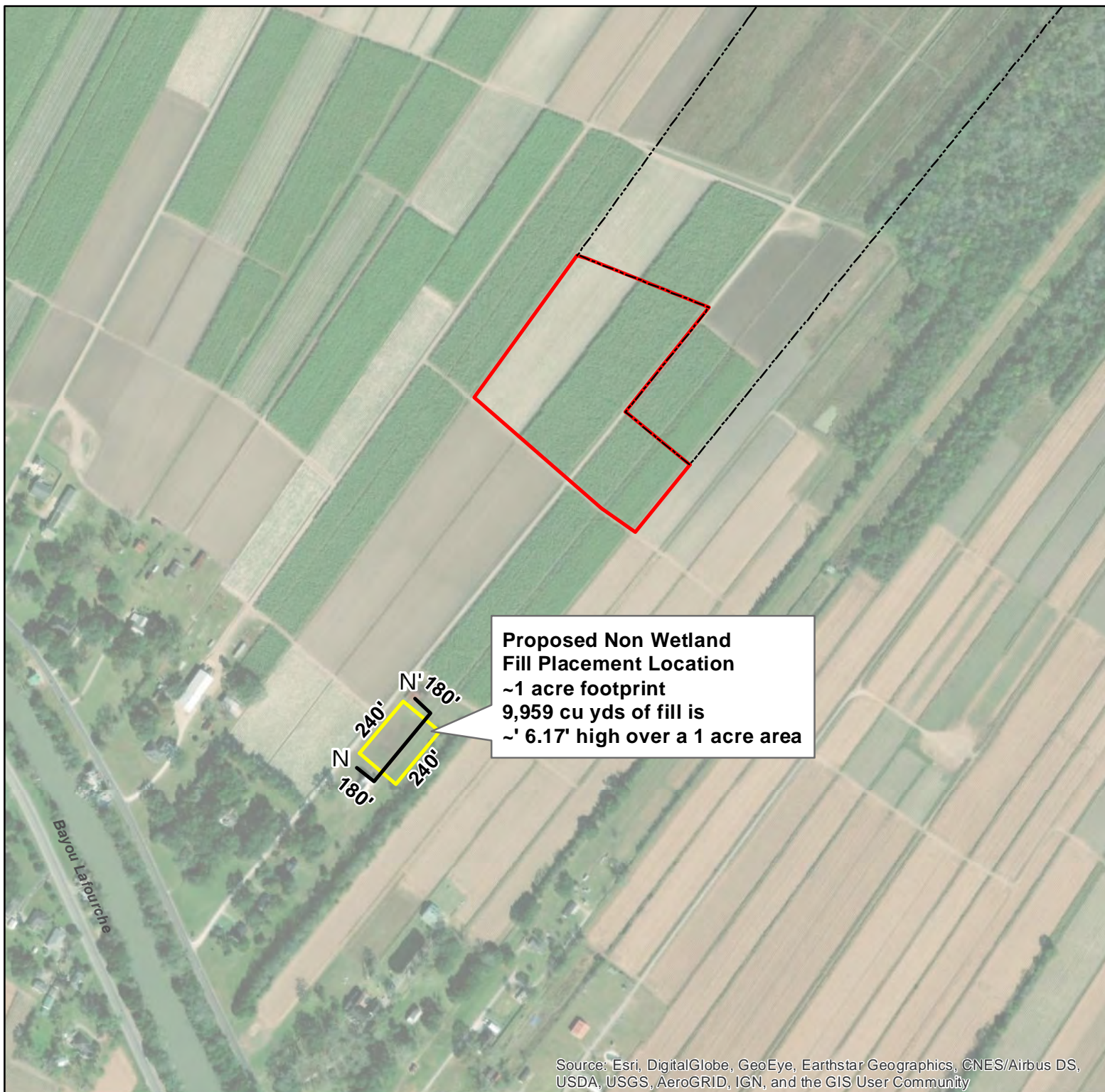
Created: AGB

Approved: GLF

Date: 03/23/2020

Map No.:

FIGURE C-26



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- BMB Boundary (231.1 acres)
- BMB Addendum Areas 1 & 2 (58.9 acres)
- Non Wetland Fill Placement (~ 1 Acre)

500 250 0 500 Feet

Map Notes:

1. The boundary shown is based on the boundary survey provided by the client.
2. Map projected to NAD83 UTM Zone 15.
3. BMB = Blouin Mitigation Bank



Raceland 330, LLC

Des Allemands, LA

FILL PLACEMENT LOCATION MAP

LAFOURCHE PARISH, LA

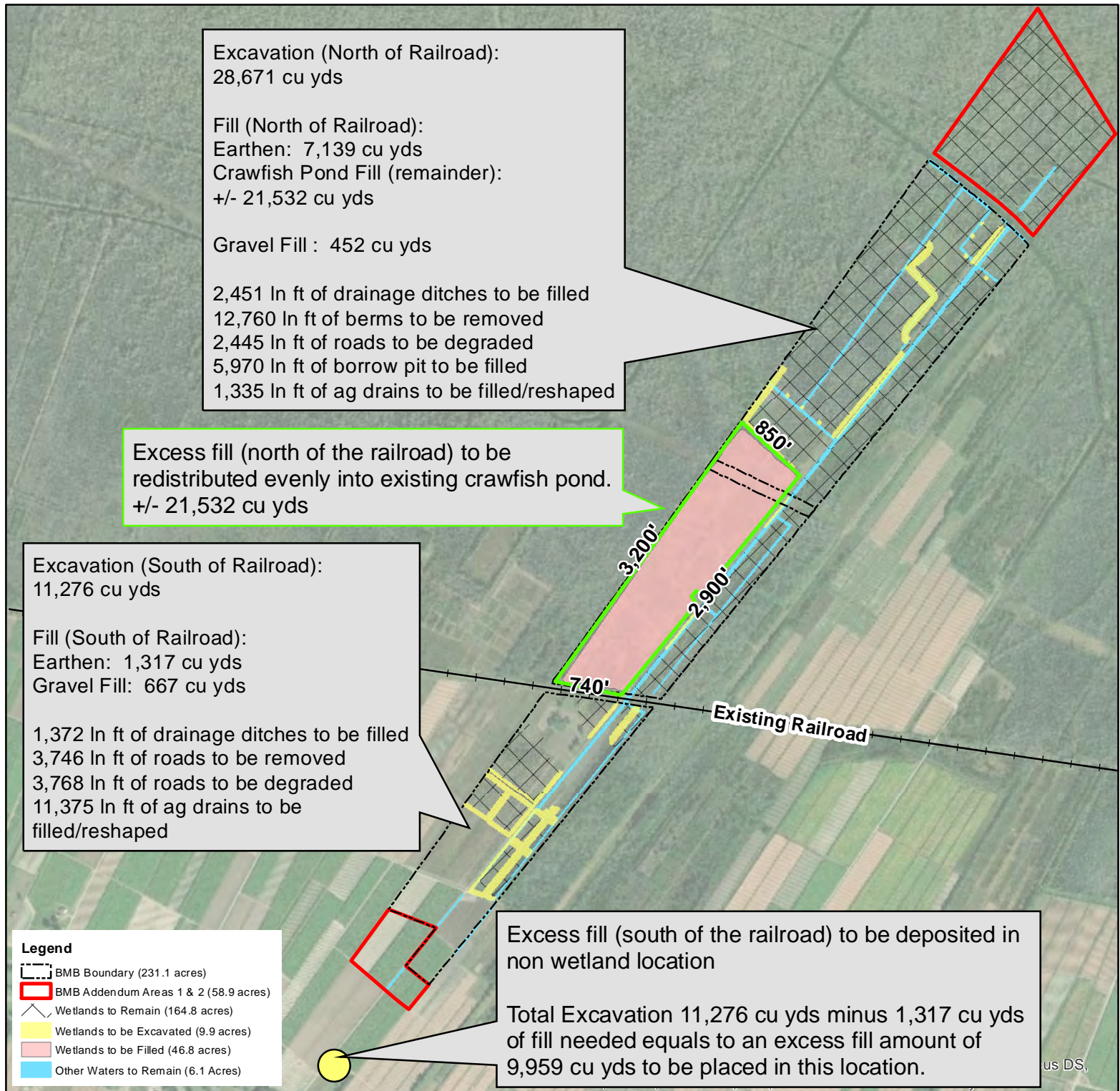
Created : AGB/ArcView

Approved :

Date : 03/23/2020

Map No. :

FIGURE C-27



1,400 700 0 1,400 Feet



Raceland 330, LLC

Des Allemands, LA

**EXCAVATION/FILL/
WETLAND IMPACT MAP
LAFOURCHE PARISH, LA**

Created : AGB/ArcView

Approved :

Date : 03/23/2020

Map No. :

FIGURE C-28

Appendix D

LRAM Spreadsheets

LOUISIANA WETLAND RAPID ASSESSMENT METHOD (LRAM) 2.0

CEMVN Acct # MVN-2016-01564-MS
 Acres Mitigation 52.9
 Watershed Basin Barataria

Bank Name

Blouin MB-BLH w/Addendum

		Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Mitigation Factors	Mitigation Type	Re-Est	Rehab	Preser	Re-Est	Pick Here	Pick Here	Pick Here	Pick Here
		6.0	5.0	0.4	6.0	0.0	0.0	0.0	0.0
	Management	None	None	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Negative Influences	Low	Low	None	Low	Pick Here	Pick Here	Pick Here	Pick Here
		-0.5	-0.5	0.0	-0.5	0.0	0.0	0.0	0.0
	Size	500 : 100	500 : 100	500 : 100	500 : 100	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Buffer / Upland	Restored	Restored	Pick Here	Restored	Pick Here	Pick Here	Pick Here	Pick Here
		0.5	0.5	0.0	0.5	0.0	0.0	0.0	0.0
	Sum:	6.0	5.0	0.4	6.0	0.0	0.0	0.0	0.0
	Area:	27.5	1.4	13.8	10.2				
	Sum x Area Affected:	165.0	7.0	5.5	61.2	0.0	0.0	0.0	0.0

Σ Mitigation: 238.7

Mitigation Potential: 4.5

COMMENTS

Mitigation Type	27.5 acres re-establishment, 1.4 acres rehabilitation, and 13.8 acres preservation + 10.2 acres re-establishment add.
Management	project functions in a self sustaining manner without dependence on structural management
Negative Influences	Low negative influences-powerline ROW emergent , 2,400 linear foot berm to remain. Total perimeter 21,000 feet = 11% of site bound by levee, railroad total boundary 2,200 feet/21,000 = 10% development border
Size	total site is 231 acres
Buffer/Upland	2.7 acres of restored buffer and 3.0 acres of preserved buffer + add. Buffers

LOUISIANA WETLAND RAPID ASSESSMENT METHOD (LRAM) 2.0

CEMVN Acct # MVN-2016-01564-MS
 Acres Mitigation 42.7
 Watershed Basin Barataria

Bank Name

Blouin MB-Bottomland Hardwood

		Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Mitigation Factors	Mitigation Type	Re-Est	Rehab	Preser	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		6.0	5.0	0.4	0.0	0.0	0.0	0.0	0.0
	Management	None	None	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Negative Influences	Low	Low	None	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		-0.5	-0.5	0.0	0.0	0.0	0.0	0.0	0.0
	Size	500 : 100	500 : 100	500 : 100	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Buffer / Upland	Restored	Restored	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
	Sum:	6.0	5.0	0.4	0.0	0.0	0.0	0.0	0.0
	Area:	27.5	1.4	13.8					
	Sum x Area Affected:	165.0	7.0	5.5	0.0	0.0	0.0	0.0	0.0

Σ Mitigation: 177.5

Mitigation Potential: 4.2

COMMENTS

Mitigation Type	27.5 acres re-establishment, 1.4 acres rehabilitation, and 13.8 acres preservation
Management	project functions in a self sustaining manner without dependence on structural management
Negative Influences	Low negative influences-powerline ROW emergent , 2,400 linear foot berm to remain. Total perimeter 21,000 feet = 11% of site bound by levee, railroad total boundary 2,200 feet/21,000 = 10% development border
Size	total site is 231 acres
Buffer/Upland	2.7 acres of restored buffer and 3.0 acres of preserved buffer

LOUISIANA WETLAND RAPID ASSESSMENT METHOD (LRAM) 2.0

CEMVN Acct # MVN-2016-01564-MS
 Acres Mitigation 197.4
 Watershed Basin Barataria

Bank Name

Blouin - SWP w/addendum

		Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Mitigation Factors	Mitigation Type	Re-Est	Rehab	Enhanc	Preser	Preser	Pick Here	Pick Here	Pick Here
		6.0	5.0	3.0	0.4	0.4	0.0	0.0	0.0
	Management	None	None	None	None	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Negative Influences	Low	Low	Low	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		-0.5	-0.5	-0.5	0.0	0.0	0.0	0.0	0.0
	Size	500 : 100	500 : 100	500 : 100	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Buffer / Upland	Restored	Restored	Restored	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0
	Sum:	6.0	5.0	3.0	0.4	0.4	0.0	0.0	0.0
	Area:	10.7	87.8	60.1	8.3	30.0			
	Sum x Area Affected:	64.2	439.0	180.3	3.3	12.0	0.0	0.0	0.0

Σ Mitigation: 698.8

Mitigation Potential: 3.5

COMMENTS

Mitigation Type	10.7 acres re-establishment, 87.8 acres rehabilitation, 60.1 acres enhancement, and 8.3 acres preservation, plus 30 acre preservation addendum
Management	project functions in a self sustaining manner without dependence on structural management
Negative Influences	Low negative influences-powerline ROW emergent , 2,400 linear foot berm to remain. Total perimeter 21,000 feet = 11% of site bound by levee, railroad total boundary 2,200 feet/21,000 = 10% development
Size	total site is 231.1 acres
Buffer/Upland	2.7 acres of restored buffer and 3.0 acres of preserved buffer + addendum buffers

LOUISIANA WETLAND RAPID ASSESSMENT METHOD (LRAM) 2.0

CEMVN Acct # MVN-2016-01564-MS
 Acres Mitigation 166.9
 Watershed Basin Barataria

Bank Name

Blouin - SWP Habitat

		Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Mitigation Factors	Mitigation Type	Re-Est	Rehab	Enhanc	Preser	Pick Here	Pick Here	Pick Here	Pick Here
		6.0	5.0	3.0	0.4	0.0	0.0	0.0	0.0
	Management	None	None	None	None	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Negative Influences	Low	Low	Low	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		-0.5	-0.5	-0.5	0.0	0.0	0.0	0.0	0.0
	Size	500 : 100	500 : 100	500 : 100	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Buffer / Upland	Restored	Restored	Restored	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0
	Sum:	6.0	5.0	3.0	0.4	0.0	0.0	0.0	0.0
	Area:	10.7	87.8	60.1	8.3				
	Sum x Area Affected:	64.2	439.0	180.3	3.3	0.0	0.0	0.0	0.0

Σ Mitigation: 686.8

Mitigation Potential: 4.1

COMMENTS

Mitigation Type	10.7 acres re-establishment, 87.8 acres rehabilitation, 60.1 acres enhancement, and 8.3 acres preservation
Management	project functions in a self sustaining manner without dependence on structural management
Negative Influences	Low negative influences-powerline ROW emergent , 2,400 linear foot berm to remain. Total perimeter 21,000 feet = 11% of site bound by levee, railroad total boundary 2,200 feet/21,000 = 10% development
Size	total site is 231.1 acres
Buffer/Upland	2.7 acres of restored buffer and 3.0 acres of preserved buffer