



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
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08/26/2019

Operations Division
Regulatory Branch
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SUBJECT: MVN 2019-00034-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 UPPER BARATARIA COASTAL MITIGATION BANK IN ASSUMPTION PARISH

NAME OF APPLICANT: Delta Land Services, LLC, 1090 Cinclare Drive, Port Allen, Louisiana 70767

LOCATION OF WORK: The 261 acre proposed site is located in Sections 22, 23 and 24, Township 13 South, Range 15 East, east of LA 308 approximately 3 miles southeast of Napoleonville, Louisiana. The site is centered on the point 29.928774° N, -90.971474° 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 levees and filling of agricultural drains, site preparation and replanting of appropriate species in order to generate bottomland hardwood 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 FOR THE PROPOSED UPPER
BARATARIA COASTAL MITIGATION BANK
MVN-2019-00034**

**ASSUMPTION PARISH
LOUISIANA**

June 24, 2019

PREPARED BY:



**DELTA LAND SERVICES, LLC
1090 CINCLARE DRIVE
PORT ALLEN, LOUISIANA 70767**

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1.0 INTRODUCTION

Delta Land Services, LLC (DLS) has prepared this prospectus in accordance with 33 CFR § 332.8(d)(2) to establish and operate the 261.0-acre Upper Barataria Coastal Mitigation Bank (UBCMB). The proposed mitigation bank is being established to provide compensatory mitigation for unavoidable impacts to “Waters of the United States¹” authorized through the issuance of Department of the Army (DA) Permits by the U.S. Army Corps of Engineers (USACE) New Orleans District (CEMVN) pursuant to Sections 9 and 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act of 1972. Additionally, the UBCMB may provide compensatory mitigation for unavoidable impacts to coastal wetland resources under the Louisiana Coastal Resources Program (LCRP)² per the provisions of LAC 43:724 and RS 49:214.22 (8).

1.1 Regional Description, Site Location, and Climate

The UBCMB is located in both the Southern Holocene Meander Belts and Inland Swamps Level IV Ecoregions of the Mississippi Alluvial Plains Level III Ecoregion (73k and 73n; Environmental Protection Agency [EPA] 2003; Omernik 1987), the Mississippi Delta Cotton and Feed Grains Land Resource Region (LRR O), and the Southern Mississippi River Alluvium Major Land Resource Area (MLRA 131A; Natural Resources Conservation Service [NRCS] 2006). The restoration site is in an area of MLRA 131A that is typically characterized by fertile, medium-textured mineral soils, smooth to undulating topography, and a long growing season. Some convex areas exist as narrow rolling intervening ridges with broad and flat interfluves. Stream valleys are typically narrow in the upper reaches but broaden rapidly downstream and have wide, flat flood plains and meandering stream channels. Other features include natural levees and undulating terraces and spoil banks from the natural and artificial deepening of drainage ways across the landscape.

The tract is approximately three miles east-southeast of Napoleonville, Louisiana. It is in Sections 22, 23 and 24 of Township 13 South, Range 15 East in Assumption Parish, Louisiana (Figures 1 and 2). The approximate site center lies at Latitude 29.928774° and Longitude -90.971474°³. The site lies in the upper portion of the approximate 2,700-square mile East Central Louisiana Coastal watershed as defined by the US Geological Survey (USGS) Hydrologic Unit Code (HUC) 08090301 (Figure 3). The natural drainage is to the east to the Baker Canal.

¹ 33 CFR § 328 defines waters of the United States as it applies to the jurisdictional limits of the authority of the Corps of Engineers under the Clean Water Act. Waters of the United States include those waters listed in 33 CFR § 328(a). The lateral limits of jurisdiction in those waters may be divided into three categories (i.e., territorial seas, tidal waters, and non-tidal waters, which are further described in 33 CFR § 328.4 (a), (b), and (c).

² The Office of Coastal Management (OCM) of the Louisiana Department of Natural Resources (LDNR) is the agency responsible for implementing the LCRP under the authority of the Louisiana State and Local Coastal Resources Management Act of 1978, as amended (Act 361, La. R.S. 49:214.21 et seq).

³ All geographic coordinates are based on North American Datum of 1983 (NAD83)

Subsequently, the Baker Canal flows into Bayou Citamon, then to Bayou Chevreuil and eventually Lake des Allemands. Natural elevations on the site range from approximately sea level to 6 feet⁴ (Figure 4). Portions of the sites are located within the 100-year flood zone per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM; Figure 5).

Assumption Parish has a warm, humid, subtropical climate characterized by relatively high rainfall. The average annual precipitation in this area is 62 inches⁵. Rainfall occurs primarily as high-intensity, convective thunderstorms, but moderate-intensity tropical storms can produce large amounts of rainfall during the fall and winter. The average annual temperatures range from a low of 41° to a high of 90° Fahrenheit (F). The growing season lasts year-round as soil temperatures rarely drop below 32°F.

1.2 Sponsorship and Ownership

DLS will be the sponsor of the UBCMB and will construct, operate, monitor, and manage the Bank. The Landowner will protect the UBCMB project area by granting the conservation servitude as described in Section 6.4.

1.3 Driving Directions to the Site

From the intersection of Highway 308 and Franklin Avenue in Napoleonville, Louisiana, proceed approximately 3.7 miles south on Highway 308. Turn left onto Rosedale Road and proceed approximately 0.8 miles to the farm shop near the southwest corner of the UBCMB boundary. The farm shop is located at approximately Latitude 29.921992° and Longitude -90.974720°. The north-south farm road (private road) lies along the western boundary of the UBCMB.

From the intersection of Highway 308 and Hwy 20 (Canal Blvd) in Thibodaux, Louisiana, proceed north on Highway 308 for approximately 15.7 miles. Turn right onto Rosedale Road and proceed to the farm shop referenced above.

⁴ All elevations referenced within the report are from digital elevation models (DEM) derived from light detection and ranging (LIDAR) datasets obtained from the Louisiana State University CADGIS Research Laboratory, adjusted using GNSS RTK Surveying and the LSU Center for Geoinformatics Virtual Reference System to obtain current Mean Sea Level data based on GEOID12B. Elevations are purported in North American Vertical Datum of 1988 (NAVD).

⁵ Precipitation and temperature averages are based on 30-year averages from 1981 through 2010 per NRCS climate datasets.

2.0 PROJECT GOALS AND OBJECTIVES

The goal of the UBCMB is the re-establishment⁶, rehabilitation⁷, and preservation⁸ of bottomland hardwood forest wetlands as defined by the Louisiana Department of Wildlife and Fisheries Natural Heritage Program (LNHP 2009). Access areas and utility rights-of-way will be maintained as non-mitigation acreage within the UBCMB. The purposes of these features are to facilitate monitoring/maintenance activities associated with Bank establishment, long-term management and continued recreational use of the property (Figure 6, Table 1).

According to the habitat description of LNHP (2009) and USACE (2017), bottomland hardwood forests are natural mixed alluvial wetland forest communities indigenous to the broad floodplain areas adjacent to the large river systems of Louisiana. These wetlands exhibit a high floristic diversity and exist in a variety of distinct species communities maintained by a natural hydrologic regime of alternating flooding and draining. The species assemblage depends on a variety of factors including elevation, soil type, and hydroperiod. These systems are important to nutrient cycling and flood regulation. Net primary productivity is increased by periodic flooding and increased water flow and decreased by stagnation.

The restoration⁹ and preservation of wetlands and restoration and protection of non-wetland forest within the 261.0-acre UBCMB will provide additional wetland functions and values that are not realized under existing conditions and land use. The cessation of crop production activities and subsequent afforestation¹⁰ with native wetland tree and shrub species combined with removal of the improved surface drainage system will provide localized improvement to downstream waters by increasing surface-water retention time for vegetative nutrient uptake and reducing sediment and chemical run-off. Wildlife habitat will improve for resident biota and nearctic-neotropical migrating bird species (e.g., staging, resting, feeding, escape cover, etc.) through afforestation and subsequent forest

⁶Re-establishment is defined in 33 CFR § 332.2 as the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

⁷Rehabilitated is defined in 33 CFR § 332.2 as the manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

⁸ Preservation is defined in 33 CFR § 332.2 as the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

¹⁰Restoration is defined in 33 CFR 332.2 as the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

¹¹The SAF (2011) defines afforestation as “the establishment of a forest or stand in an area where the preceding vegetation or land use was not forest whereas reforestation is the re-establishment of forest cover either naturally (by natural seeding, coppice, or root suckers) or artificially (by direct seeding or planting) —note reforestation usually maintains the same forest type and is done promptly after the previous stand or forest was removed —synonym regeneration”.

development. The removal of farming and associated land improvement practices with subsequent afforestation of these areas will help reduce localized drainage erosion and reduce the redistribution of sediment downstream. Specifically, DLS' objectives are to restore, improve, and protect the physical, chemical and biological functions of a forested wetland system as follows:

- Restoration and protection of historic and self-sustaining surface hydrology within the 261.0-acre UBCMB through hydrologic restoration activities such as backfilling artificial drainages and breaching existing spoil banks;
- Restoration of a native bottomland hardwood (161.8 acres) forest community through hydrology restoration and afforestation with native species;
- Improvement of local and downstream water quality by means of reduced non-point source runoff, reduced erosion through cessation of farming, and increased nutrient uptake through hydrological and vegetative restoration activities;
- To provide for the long-term protection through the execution of a perpetual-term conservation servitude and establishment of a long-term fund to cover annual expenditures associated with maintenance and management of the UBCMB.

3.0 ECOLOGICAL SUITABILITY OF THE SITE

3.1 Historic Ecological Characteristics and Current Land Use

The primary factors considered during site selection were the presence of hydric soils, evidence of forested wetlands prior to agricultural conversion, and compatibility with existing and anticipated surrounding land uses (Figure 7).

Historically, the site and surrounding areas were forested wetlands. According to a review of historical topographic maps and aerial photography, the entirety of the property was in agricultural use prior the 20th century. Production ceased on a portion of the property and it reverted to a bottomland hardwood forest. However, much of the property remains in agricultural use for crop production with a small area utilized as aquaculture, specifically crawfish production (Figures 8 through 16).

Based on soil type and landscape position, the native plant community on the site was comprised of deciduous bottomland tree species with a minor component of needle-leaved swamp species. Historic sources of surface water on the UBCMB included overbank flooding from Mississippi River and Bayou Lafourche, tidal flows, precipitation, and locally perched high-water tables. Overbank flooding no longer occurs from the waterways, however, portions of the restoration site currently remain flooded or ponded for extended periods as a result of direct precipitation, surface runoff from higher elevations, backwater flooding, and local high-water

tables. The site's relatively flat topography allows for lower runoff potential and greater retention without the aid of artificial drainages.

3.2 Soils

Figure 17 depicts the mapped soil units within the project area. The site is mapped as having partially hydric and non-hydric soil components based on NRCS Soil Survey Geographic Database (SSURGO) data and is shown to consist of 3 unique soil types with various hydric ratings; Cancienne silty clay loam, 0 to 1 percent slopes (hydric rating 10); Schriever clay, 0 to 1 percent slopes, frequently flooded (hydric rating 100); and Schriever clay, 0 to 1 percent slopes (hydric rating 98) (NRCS 2019^c). Though the Cancienne series soils have low hydric ratings, field investigations revealed hydric soil characteristics and desirable restoration conditions.

3.3 Vegetation

The agricultural areas are used for growing crops of sugarcane (*Saccharum* L.) and soybeans (*Glycine max*) as well as utility rights-of-way (Figure 18). Other species present within the agricultural fields include field sowthistle (*Sonchus arvensis*), Carolina geranium (*Geranium carolinianum*), henbit deadnettle (*Lamium amplexicaule*), white clover (*Trifolium repens*), and butterweed (*Plackera glabella*).

The aquaculture area is an impounded area managed for crawfish production. The vegetation consists of various rushes (*Juncus* spp. and *Eleocharis* spp.), sedges (*Carex* spp.) and flatsedges (*Cyperus* spp.) species. The levee surrounding this impoundment was covered primarily with giant ragweed (*Ambrosia trifida*) and perennial rye (*Lolium perenne*).

The existing forested wetlands are dominated by American elm (*Ulmus americana*), sweetgum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*) and various oaks such as overcup oak (*Quercus lyrata*), Nuttall oak (*Quercus texana*) and water oak (*Quercus nigra*) within the tree strata. The sapling/scrub stratum was dominated by dwarf palmetto (*Sabal minor*) and various oaks with American elm (*Ulmus americana*), green ash, and sugarberry (*Celtis laevigata*) present at a lesser extent. The herbaceous strata are dominated by lizard's-tail (*Saururus cernuus*), savannah-panicgrass (*Phanopyrum gymnocarpon*) and Cherokee sedge (*Carex cherokeensis*)¹¹.

3.4 Hydrology

Current project hydrology relies primarily on direct precipitation, surface runoff from

¹¹ The vegetation in the plant communities are based on a data points taken on December 17, 2018 by DLS biologists for the wetland delineation report reviewed by the CEMVN for the PJD issuance described in section 3.5. However, this description is based on a sample and is not an inclusive list of all species present.

higher elevations, and local high-water tables. Within the project site, natural topography creates a slow sheet flow drainage generally from west to east. Within the existing agricultural area, most of this surface water is captured by some form of artificial drainage feature made up of a series of culverts and drains connected to surface ditches. These surface ditches are connected to two existing pumps that empty into the Madewood Canal, an extension of the Baker Canal, and an unnamed canal (Figure 19). These canals flow east toward the Baker Canal and then into Bayou Citamon, Bayou Chevreuil, and eventually into Lac des Allemands. The aquaculture area is leveed, and water is managed within this area utilizing a movable, power take-off (PTO) pump unit and water level control structure.

3.5 Jurisdictional Wetland Status

A preliminary jurisdictional determination (PJD) was issued on May 17, 2019 (MVN-2019-00034-SG) for the UBCMB (Attachment B). The results of the PJD show approximately 98.9 acres of wetlands and 2.1 acres of other waters with the UBCMB. The 98.9 acre of wetlands encompass the 80.9 acres of existing BLH proposed for preservation and the 4.1 acres of aquaculture area proposed for rehabilitation.

3.6 General Need

In addition to providing compensation for unavoidable impacts associated with local commercial and residential developments, the proposed UBCMB will also serve to mitigate for potential impacts associated with linear projects such as pipelines and roadways in the constantly developing industrial Barataria basin. Wetland restoration sites such as the UBCMB in the Barataria basin with increasing development and urbanization will provide an important resource regarding storm water retention, flood storage and habitat for species of greatest conservation need.

Major soil resource concerns exist in this area due to the generally unconsolidated nature of the aquic, organic, and alluvial sediments from which the landscape is formed. These concerns include control of surface water, management of soil moisture, and maintenance of organic matter content to ensure soil productivity. Though many of the soils in this region remain wet or have a high-water table for some or most of the year, forested wetland restoration projects like the proposed UBCMB serve to increase the amount of precipitation interception and increase flood/storm water retention time. These functions serve to reduce potential erosion hazards and aid in the accumulation and maintenance of soil organic matter.

The restoration and afforestation of the UBCMB near larger tracts of forested lands will provide benefit to various species of wildlife such as nearctic-neotropical migrant birds. Twedt et al. (1999) lists 14 forest breeding species as species of high concern. The planting of densely spaced seedlings and the management of such species to provide a diversity of structure in areas within largely forested

landscapes is an identified strategy to encourage the recruitment of breeding populations of scrub-dwelling (thamnic) and silvicolous bird species (Twedt et al. 1999; Twedt et al. 2010).

3.7 Technical Feasibility

The construction work required to develop the proposed UBCMB is based on currently accepted restoration methods and is technically feasible. The construction work will consist of 1) site preparation, 2) afforestation, and 3) manipulation of artificial drains and/or impoundments. The relatively low landscape position and the presence of hydric soils indicate that minimal soil work will be required for successful restoration of wetland hydrology and forested wetlands in the areas currently being used as crop fields. The existence of forested wetlands within and adjacent to the UBCMB also suggests a high potential for successful restoration. Once artificial drainage modifications are rendered ineffective through restoration efforts, a more natural, historic water regime will be restored.

4.0 ESTABLISHMENT OF THE MITIGATION BANK

4.1 Site Restoration Plan

The proposed mitigation work plan involves the cessation of agricultural operations, restoration of surface hydrology, afforestation, and implementing effective short and long-term management strategies. Establishment of the UBCMB will restore 161.8 acres of BLH forest. The remaining area will consist of 80.9 acres of forested wetland preservation, 14.0 acres of utility rights-of-way (ROW) and 4.3 acres of access trail¹² (Figure 6, Table 1).

Site preparation will be accomplished by drainage/spoil removal, herbicide treatments, cultivation, and ripping the soil at equidistant intervals to a depth of approximately 18 inches (Allen et al. 2001). As part of the restoration activity, approximately 37,075 linear feet (approximately 3.35 acres) of agricultural drains will be filled to grade or slightly subgrade with approximately 14,193 cubic yards of adjacent in-situ earthen material and spoil (Figure 20). Per the PJD, approximately 2.1 acres of these drains are mapped as non-wetland waters. The approximately 1,890 linear feet of levee (approximately 0.65 acres and approximately 4,200 cubic yards) surrounding the aquaculture area will be degraded by pushing the levee into the borrow area that is parallel to the interior side of the levee and the water control will be removed. Native seedlings will be planted during the first planting season following site preparation.

Table 2 describes the species suitable for the proposed habitat type. The arrangement of species was based upon native trees noted in adjacent forests as

¹² A portion of access trail will exist within the utility ROW which is part of the 14.2 acres of ROW.

well as those in which the native range has been documented for the UBCMB by the LNH (2009), Holcombe et al. (2015), Burns and Honkala (1990), Lichvar et al. (2016) and NRCS (2019^a). The exact species and quantities to be planted will be determined by the availability of such species from commercial nurseries capable of providing localized ecotype seedlings. At least ten species shall be represented in the planting mosaic to insure adequate species richness. Seedlings will be mixed prior to planting so that areas are not afforested with a monotypic community (Twedt and Best 2004). Within restoration areas, hard mast¹³ species should account for approximately 60% of the tree plantings. All species selected for afforestation have a designated growth habit of a tree¹⁴ or combination tree/shrub¹⁵ per NRCS 2019^a. All species planted within the wetland restoration areas will have an indicator status of Obligate (OBL), Facultative Wetland (FACW) or Facultative (FAC) as described by Lichvar et al. (2012) and Lichvar et al. (2016). Restoration areas will be planted at an approximate density of 538 stems per acre.

The afforestation effort will integrate the utilization of fast-growing soft mast species with slower-growing hard mast species to allow for greater vertical structural diversity which is necessary habitat for forest breeding birds of highest conservation importance (Twedt et al. 1999¹). The integration of rapid growth early successional species mimics early natural succession and provides natural habitat and partial cover for late successional species adapted for growth in partial cover and dappled sunlight (Twedt and Portwood 1997, Gardiner and Hodges 1998). The early successional species create biotic and abiotic environmental conditions that promote seedling emergence and survival of late successional species (Harper et al. 1965, Twedt and Portwood 1997).

The 80.9 acres of Forested Wetland Preservation represents a healthier assemblage of mature trees. The preservation credit type is limited to 50% of the restored area. These forests are of high ecological value and provide a multitude of function and value to both water and wildlife resources. Placing these areas under the conservation servitude ensures the continued presence of this resource and eliminates the threat and logging and future degradation.

Hydrologic restoration in the agricultural portions of the proposed UBCMB will increase the retention time of surface water and saturation, which will reduce nonpoint source runoff and increase water quality through increased nutrient uptake by vegetation. Within the property, culverts and ditching that direct the drainage of existing agriculture into the Madewood-Baker Canal system will be removed, filled,

¹³ For the purpose of this, hard mast is defined as heavy-seeded species of *Quercus* spp. and *Carya* spp.

¹⁴ Trees are defined as perennial, woody plant with a single stem (trunk), normally greater than 13 to 16 feet in height; under certain environmental conditions, some tree species may develop a multi-stemmed or short growth form (less than 13 feet in height).

¹⁵ Shrubs are defined as perennial, multi-stemmed woody plant that is usually less than 13 to 16 feet in height. Shrubs typically have several stems arising from or near the ground but may be taller than 16 feet or single-stemmed under certain environmental conditions.

plugged, or otherwise rendered ineffective. The existing pump along the Madewood Canal will be removed and the pump along the unnamed drain will remain (Figure 20). Most existing elevated access roads will be leveled to grade and planted as part of the re-establishment effort. Some interior access roads will remain to accommodate future monitoring and maintenance of the project. However, these areas will remain as close to natural grade as possible to not adversely affect hydrology sheet flow across the site (Attachment C).

4.2 Current Site Risks

Given the rural setting of the area, the Sponsor does not foresee any adverse impacts to the mitigation site resulting from the continued existence and operation of the neighboring land uses. Much of the land use and cover type surrounding the UBCMB are existing forestlands and agriculture fields.

Some surface encumbrances exist within the UBCMB, including servitudes for powerline and pipeline rights-of-way. These features will remain in their current use; however, the Sponsor does not anticipate any adverse impacts to the successful restoration and management of the UBCMB as a result of these features. The Assumption Parish Drainage District No. 2 maintains the Madewood and Baker Canal waterway strictly using chemical control of vegetative cover within the channel per correspondence from President Todd Crochet dated February 25, 2018. The powerline and pipeline servitudes are maintained with natural assemblages of emergent vegetation and at grade so as not to impede restoration of the natural hydrologic flow. Mineral reservations and agriculture leases also exist but will not affect the proposed restoration effort as the farm leases will be terminated prior to filing the conservation servitude and any mineral exploration will not affect surface use within the project boundary. The Mitigation Banking Instrument (MBI) will contain a final survey plat of the proposed conservation servitude area, a metes and bounds description, and a title opinion.

4.3 Long-term Sustainability and Water Rights

Long-term viability and sustainability of the UBCMB will be ensured through active and adaptive management including, but not limited to, invasive species control, appropriate monitoring, and long-term maintenance. No long-term structural management will be required because there are no water control structures to maintain.

Regarding water rights, Article 490 of the Louisiana Civil Code treats water resources under the theory of absolute ownership and rule of capture provided that such capture does not result in harm to neighboring properties. The proposed UBCMB will depend primarily on precipitation, runoff from surrounding areas, locally high-water tables, and tidal influence of the Madewood and Baker Canals.

As such, long-term hydrology maintenance will not depend on the utilization of water captured from irrigation wells or any other artificial source; therefore, sufficient water rights are ensured for such purposes. No adverse impacts will occur on neighboring properties as a result of this project.

5.0 PROPOSED SERVICE AREA

The Barataria Basin will serve as the service area for the Bank (Figure 21). The use of credits outside of the defined service area will be handled on a case specific basis by the CEMVN and will be specified as such in the subsequent MBI.

The UBCMB restoration site would consolidate the mitigation for these types of impacts within a single, strategic location. This will provide the most benefit to the watershed through the restoration and protection of a larger block of sensitive habitat, offsetting any cumulative effect of smaller, spatially fragmented projects.

6.0 OPERATION OF THE MITIGATION BANK

DLS will comply with all conditions of Sponsorship required by the CEMVN. The UBCMB will be established and operated through mitigation bank procedures outlined in 33 CFR § 332.8. This includes, but is not limited to, review process, modifications, permit coordination, project implementation, financial assurance determination and mechanisms, credit determination, accounting procedures, credit withdrawals, and the use of credits. Details on the operation of the UBCMB will be further described in the Draft MBI per 33 CFR § 332.8 (6).

6.1 Project Representatives

Sponsor: Delta Land Services, LLC
1090 Cinclare Drive 1008
Port Allen, LA 70767
Attn: Daniel Bollich
Phone: 225-388-5146
Electronic Mail: daniel@deltaland-services.com

Landowner: Rosedale Land Company, LLC
506 Brule Road
Labadieville, LA 70372
Attn: Jamie Boudreaux and Richard Boudreaux

6.2 Qualifications of the Sponsor

Per 33 CFR § 332.8(d) (2) (vi.), this section describes the Sponsor's qualifications to successfully complete all work associated with establishment and operation of

the proposed UBCMB. DLS will serve as the Sponsor and is a land management and restoration company whose technical staff includes Certified Wildlife Biologists (The Wildlife Society), Professional Wetland Scientists (Society of Wetland Scientists), Certified Foresters (Society of American Foresters) and Certified Ecological Restoration Practitioners (Society for Ecological Restoration). In addition, DLS has construction specialists experienced in wetland construction activities such as heavy equipment operation, vegetation establishment, herbicide application, and contractor management. The biographies of DLS personnel are available at www.deltaland-services.com.

DLS currently sponsors or manages 15 approved wetland and/or stream mitigation banks totaling over 8,700 acres within the CEMVN, Vicksburg District (CEMVK), Galveston District (CESWG) and Fort Worth District (CESWF). DLS currently has 9 pending mitigation bank sites that are under review with the CEMVN, CEMVK and CESWG totaling over 14,000 acres. In addition to mitigation banking, DLS serves as the responsible party for the establishment and maintenance of over 3,900 acres of approved Permittee-Responsible Mitigation (PRM) wetland and stream projects within the CEMVN, CEMVK and CESWG.

6.3 Proposed Long-term Ownership and Management Representatives

Roseland Land Company, LLC will own the UBCMB. However, DLS will be the long-term manager but may appoint a Long-term Steward in accordance with 33 CFR § 332.7 (d) and approval from the CEMVN.

6.4 Site Protection

In order to provide for such protection, Roseland Land Company, LLC shall execute a perpetual conservation servitude (pursuant to the Louisiana Conservation Servitude Act, R.S. 9:1271 *et seq.*) on all acreage identified as the UBCMB and record it in the Mortgage and Conveyances Records Office of Assumption Parish. Roseland Land Company, LLC will utilize a not-for-profit conservation group as the entity that will hold the servitude.

6.5 Long-term Strategy

Long-term management will consist of monitoring, vegetation management, invasive species control, boundary maintenance, site protection and funding of such activities. Invasive species control will include control of nuisance wildlife species such as feral hogs (*Sus scrofa*). The forest will be managed to maintain or increase the biological, chemical, and physical wetland functions at the site and to achieve and maintain the desired forest conditions which will provide forested habitat capable of supporting populations for priority wildlife species. A long-term management plan will be included with the DMBI which will detail long-term

management needs, costs and identify a funding mechanism in accordance with 33 CFR § 332.7 (d). The Sponsor (or Long-term Steward) and the Owner (or its heirs, assigns or purchasers) shall be responsible for protecting lands contained within the UBCMB in perpetuity.

7.0 OTHER CONSIDERATIONS FOR EVALUATION

While this project is being proposed as an individual mitigation bank project, DLS has other mitigation banks currently under review by the CEMVN within the Barataria Watershed where DLS is the proposed Sponsor and project site is similarly situated to that of the UBCMB. Should an MBI be approved for those banks allowing them to operate as an umbrella bank, this site may meet the criteria as a potential site for inclusion. DLS respectfully requests CEMVN and Interagency Review Team (IRT) input on this concept during the review of this prospectus. Additionally, should this bank continue in the review process as it is currently proposed within this prospectus, DLS requests consideration and input on the possibility of developing the Draft MBI for the UBCMB to serve as an umbrella instrument allowing the incorporation of similarly situated sites in the future.

8.0 CONCLUSION

In summary, the proposed 261.0-acre UBCMB has a high potential for successfully restoring 161.8 acres of bottomland hardwood forested wetlands and preserving 80.9 acres of bottomland hardwood wetlands to be used as compensatory mitigation. The cessation of the current agricultural land use, re-establishment of forested cover and restoration of a more natural hydrologic water regime will result in improved water quality through a reduction in non-point source storm runoff, increase ecological diversity, and provide increased habitat for resident, migratory, and recovering wildlife species. The project is compatible with adjacent land uses and coincides with current initiatives to restore and improve the aquatic conditions and overall ecological functions of the larger watershed.

9.0 REFERENCES

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Attachments

Attachment A
Tables and Figures

Table 1. Post-Restoration Mitigation Habitat Types at the Upper Barataria Coastal Mitigation Bank in Assumption Parish, Louisiana.

Mitigation Habitat Types	Acres
Coastal Bottomland Hardwood Re-establishment	157.7
Bottomland Hardwood Rehabilitation	4.1
<i>Total Forested Restoration</i>	161.8
Coastal Wetland Forest Preservation	80.9
<i>Total Forested Preservation</i>	80.9
Perimeter Access Areas	4.3
Utility Rights of Way	14.0
<i>Total Non-Mitigation Credit Area</i>	18.3
Total Project Acreage	261.0

Table 2. Planting Composition of Wetland Restoration Areas at the Upper Barataria Coastal Mitigation Bank in Assumption Parish, Louisiana ¹.

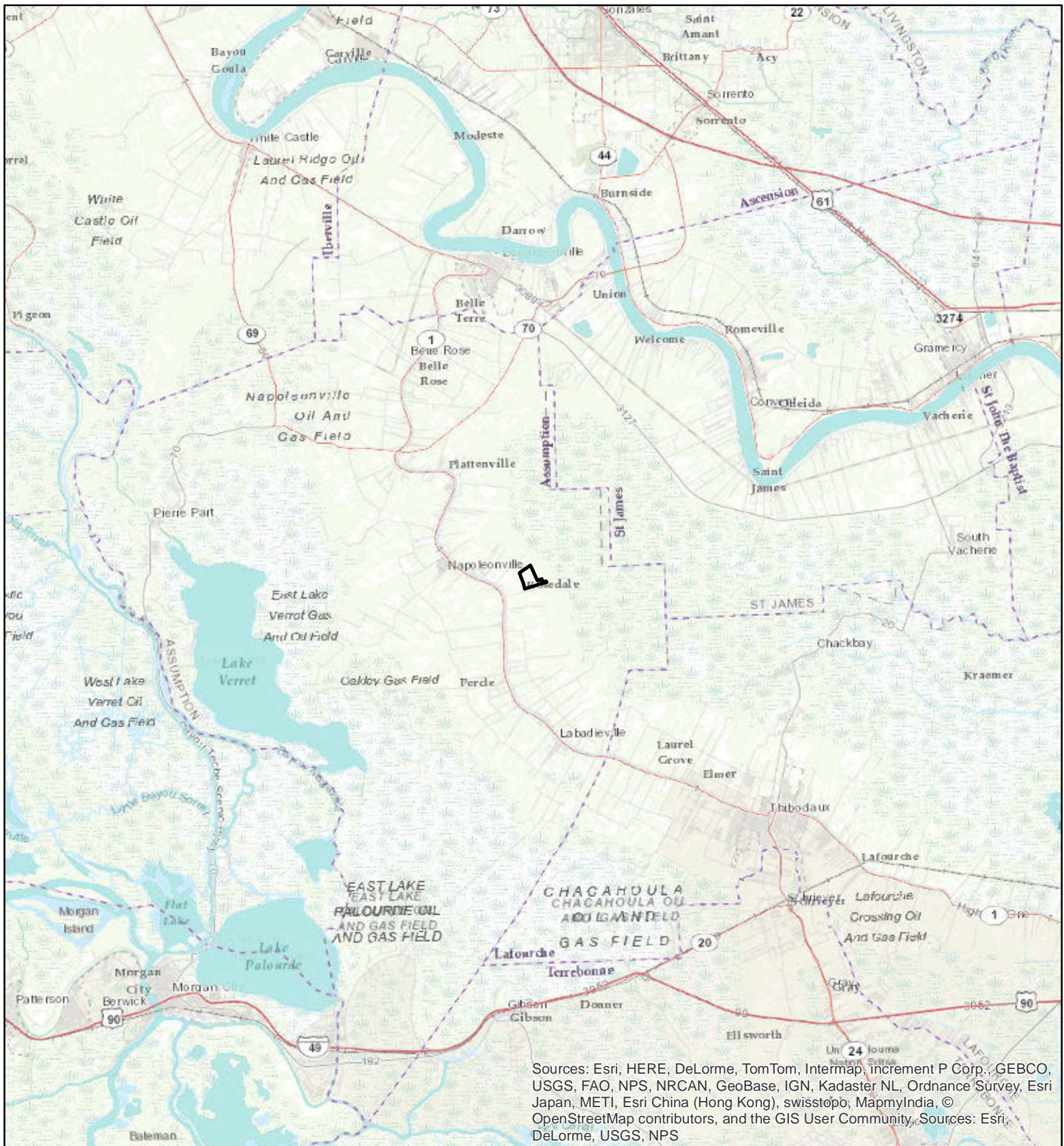
Common Name	Species	Wetland Indicator Status ²	Mast Type ³	Approximate Percent Composition Range ⁴
Overcup oak	<i>Quercus lyrata</i>	OBL	Hard	<25%
Nuttall oak	<i>Quercus texana</i>	FACW	Hard	<25%
Willow oak	<i>Quercus phellos</i>	FACW	Hard	<25%
Laurel oak	<i>Quercus laurifolia</i>	FACW	Hard	<25%
Cow oak	<i>Quercus michauxii</i>	FACW	Hard	<25%
Cherrybark oak	<i>Quercus pagoda</i>	FACW	Hard	<25%
Water hickory	<i>Carya aquatica</i>	OBL	Hard	<25%
Drummond red maple	<i>Acer rubrum var. drummondii</i>	FAC ³	Soft	<10%
Sugarberry	<i>Celtis laevigata</i>	FACW	Soft	<10%
Mayhaw	<i>Crataegus opaca</i>	OBL	Soft	<10%
Green ash	<i>Fraxinus pennsylvanica</i>	FACW	Soft	<10%
Sycamore	<i>Platanus occidentalis</i>	FACW	Soft	<10%
Sugarberry	<i>Celtis laevigata</i>	FACW	Soft	<10%
Buttonbush	<i>Cephalanthus occidentalis</i>	OBL	Soft	<10%
Baldcypress	<i>Taxodium distichum</i>	OBL	Soft	<10%

¹ All plant scientific nomenclature is from the NRCS Plants Database, available at <http://plants.usda.gov> and accessed on June 19, 2019

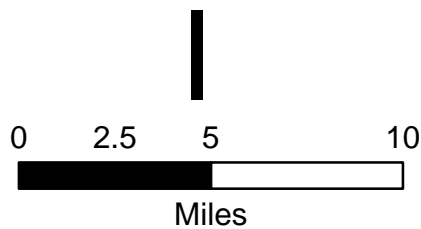
² Wetland Indicator Status from Lichvar et al (2016)

³ For the purpose of this table, hard mast species consists of oaks or hickories. All other species are soft mast.

⁴ These represent the percentage range within the entire planting composition (i.e. both hard and soft mast). However, the overall percentage of hard mast planted will account for approximately 60% of the overall planting. The exact species and quantities to be determined by seedling availability from commercial sources providing seedlings grown from localized ecotypes. However, the overall planting will have no fewer than 10 species within the assemblage.



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

VICINITY MAP

Assumption Parish, LA

Created : TSC/ARCVIEW

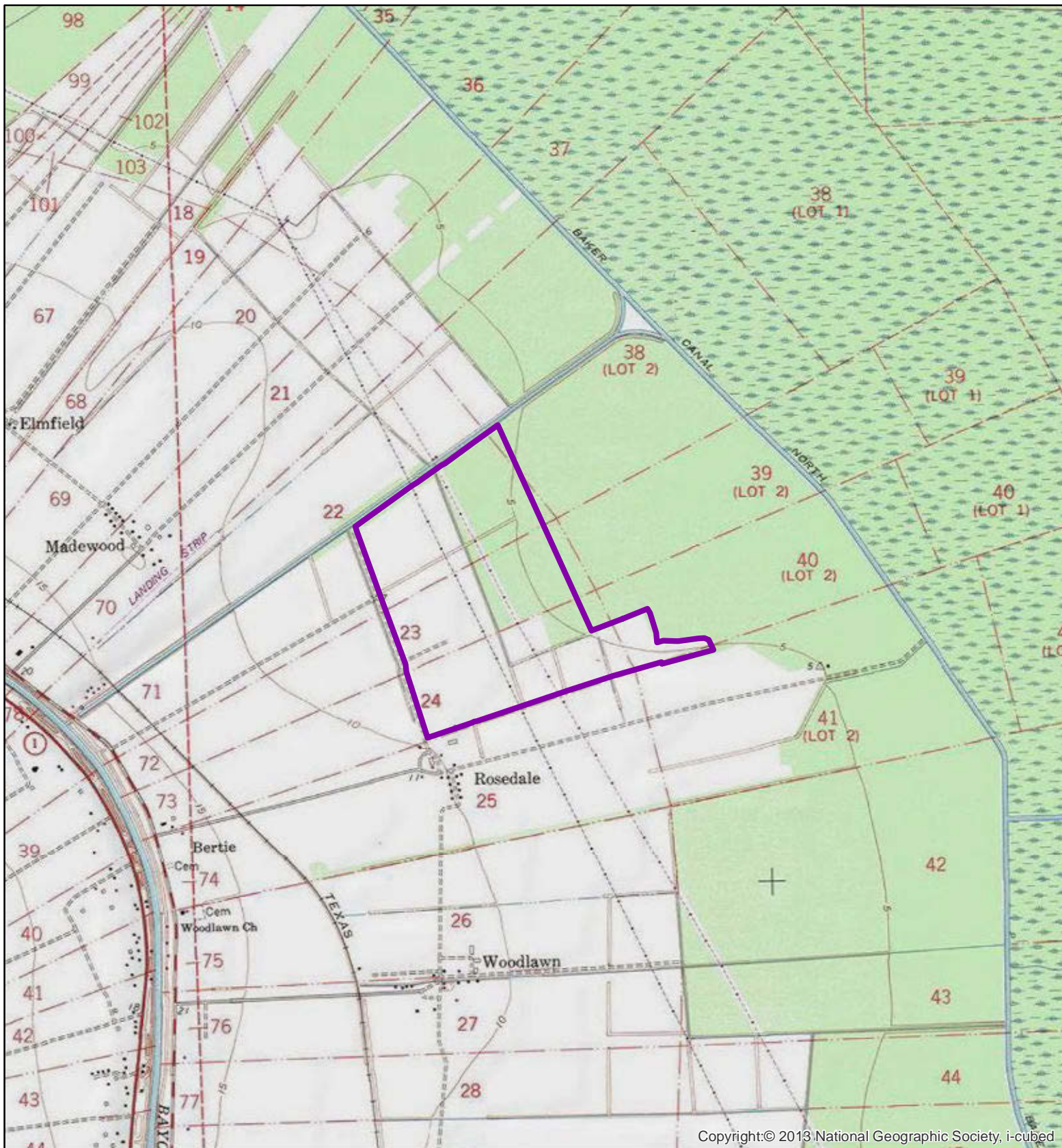
Approved : LW

Date : 06/13/2019

Map No. : F01_VicinityMap

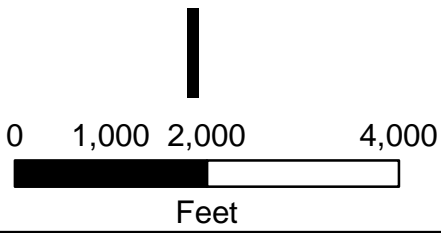


FIGURE 1



Copyright: © 2013 National Geographic Society, i-cubed

 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

USGS 7.5' QUADRANGLE MAP

Assumption Parish, LA


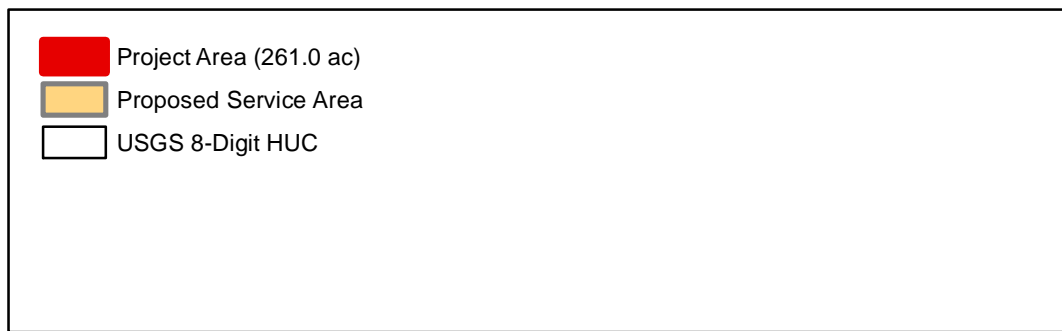
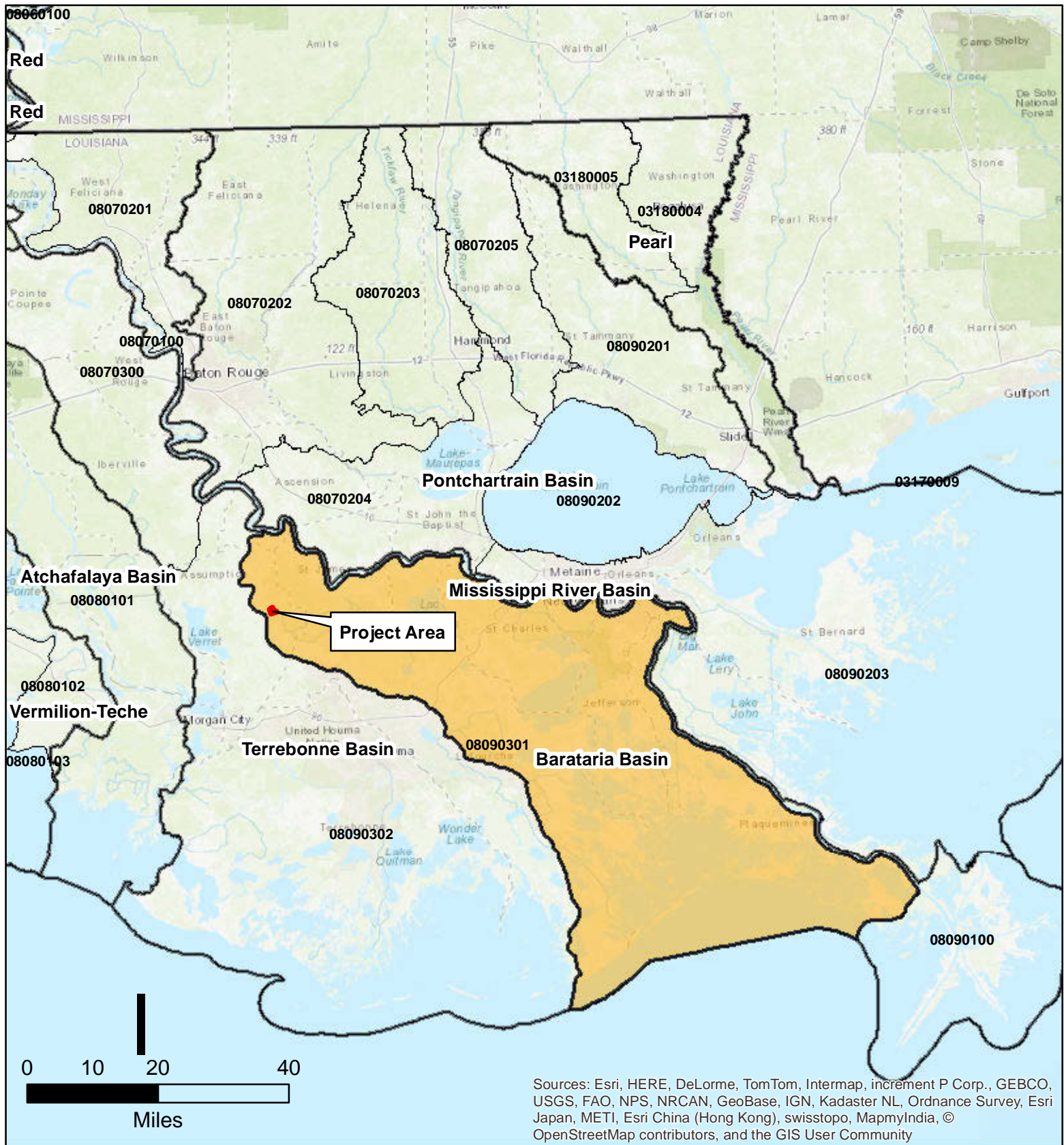
Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F02_QuadMap	

FIGURE 2



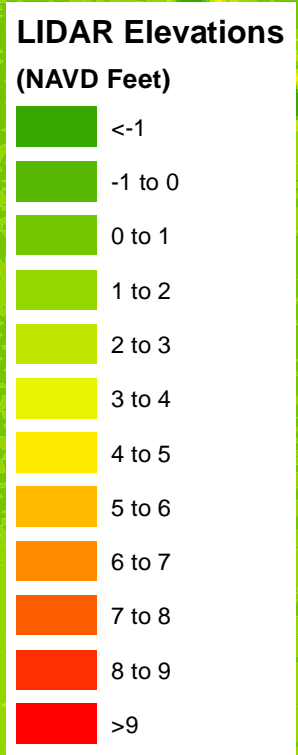
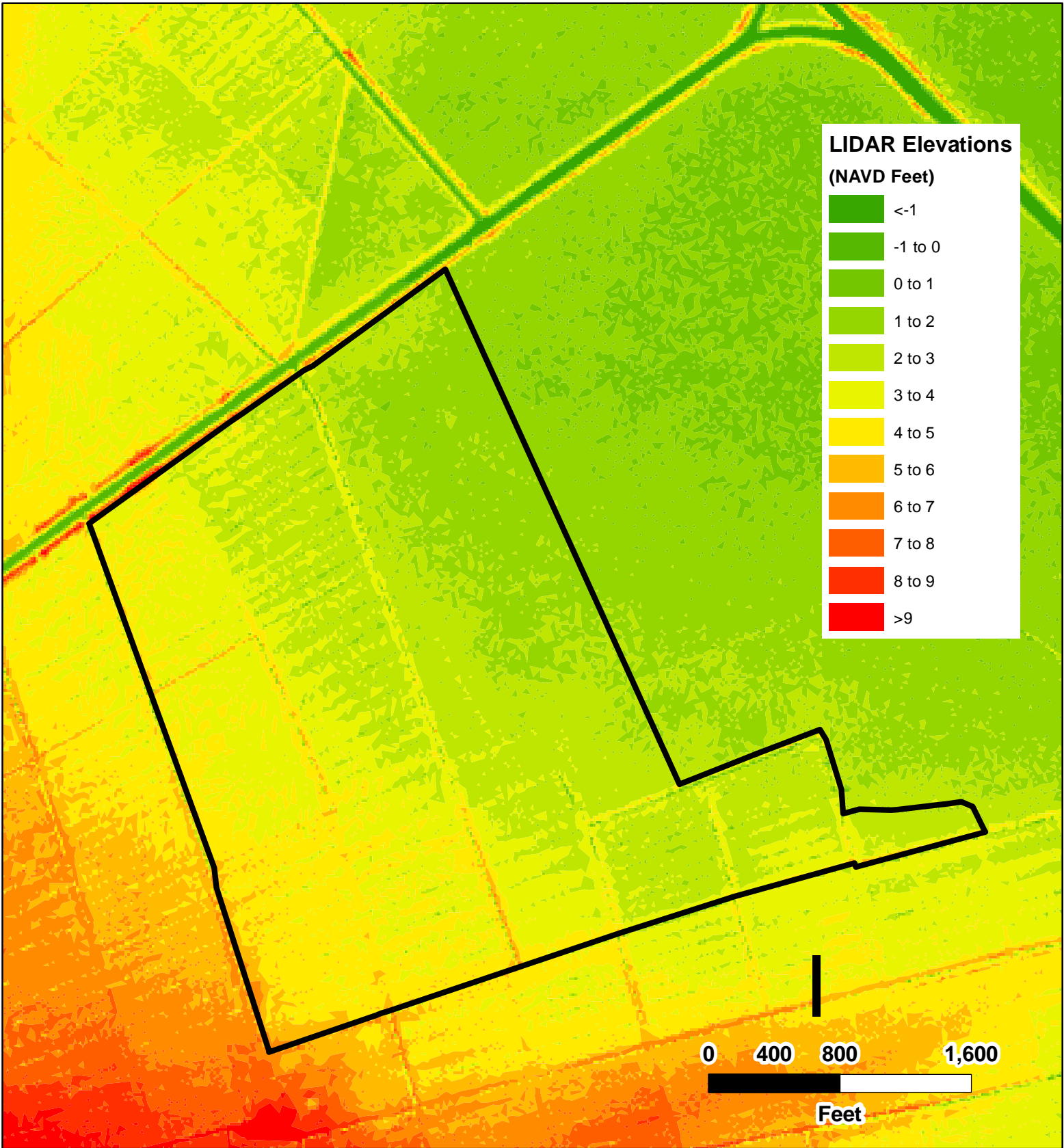
Upper Barataria Coastal Mitigation Bank


USGS HUC AND RIVER BASIN MAP

Assumption Parish, LA

Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F03_HUCMap	

FIGURE 3



 Project Area (261.0 ac)

Note: This DEM is based on the LiDAR data measured in 2002 as part of the Louisiana FEMA Project - Phase 2 of Louisiana LiDAR Data Development. Subsequently, the data was ground-truthed utilizing an RTK GNSS unit utilizing corrections derived from the C4G network. Given modernization of the geoid model since the LiDAR was measured, the DEM was adjusted by approximately -1 feet to reflect NAVD utilizing the GEOID 12A.

Upper Barataria Coastal Mitigation Bank

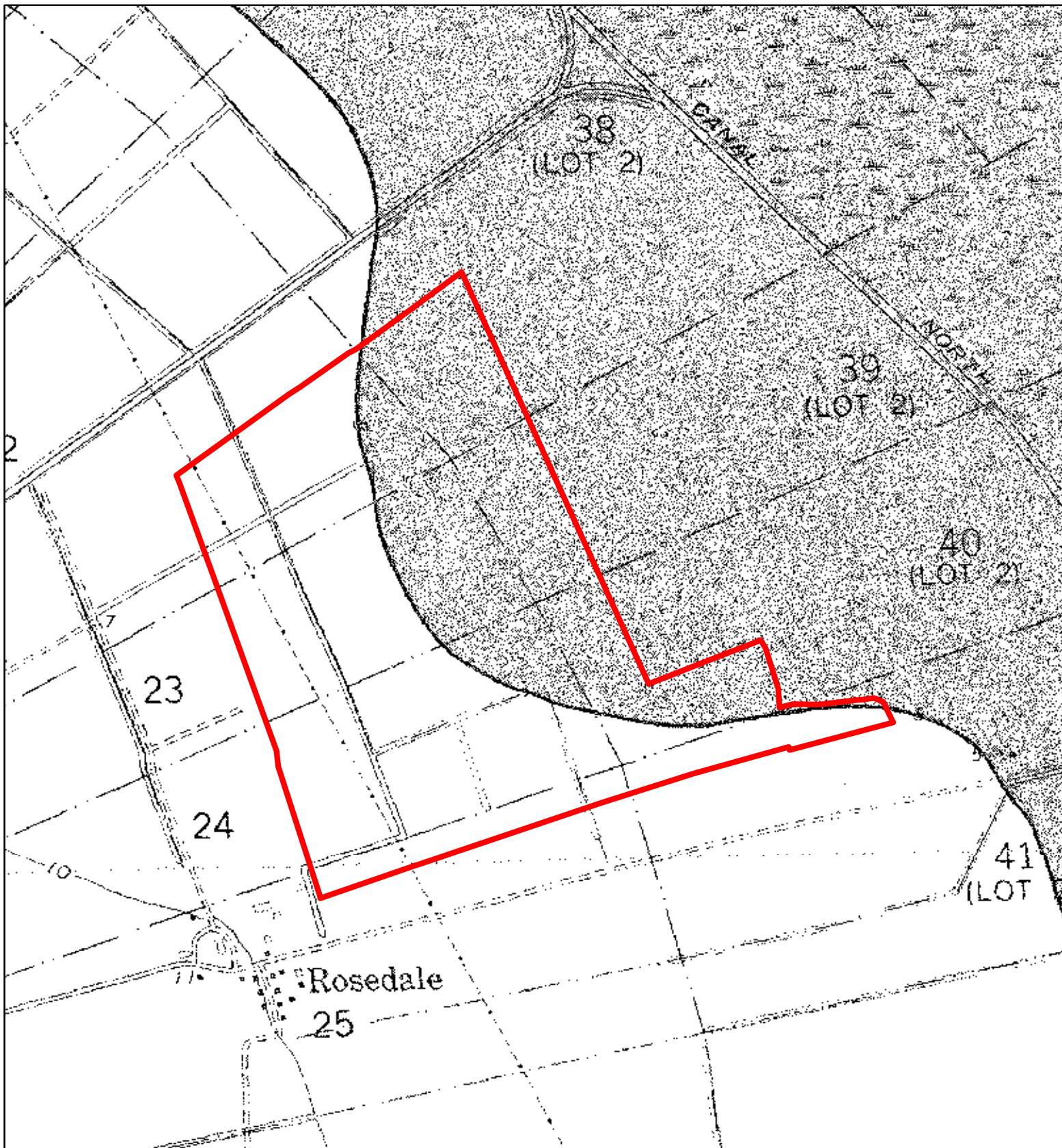
LIDAR DIGITAL ELEVATION MODEL

Assumption Parish, LA

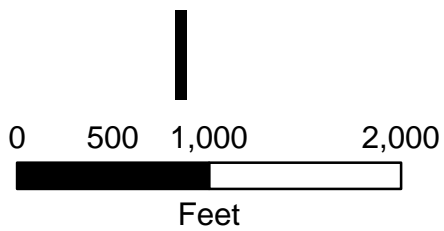
Created : TSC/ARCVIEW
Approved : LW
Date : 06/13/2019
Map No. : F04_LidarMap



FIGURE 4



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

FEMA FIRM FLOOD MAP

Assumption Parish, LA

Created : TSC/ARCVIEW

Approved : LW

Date : 06/13/2019

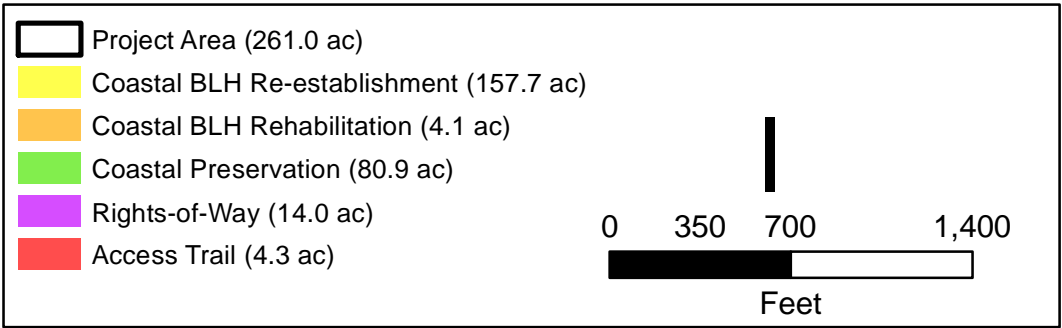
Map No. : F05_FEMAMap



FIGURE 5



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Upper Barataria Coastal Mitigation Bank

PROPOSED UPPER BARATARIA TRACT MITIGATION FEATURES

Assumption Parish, LA


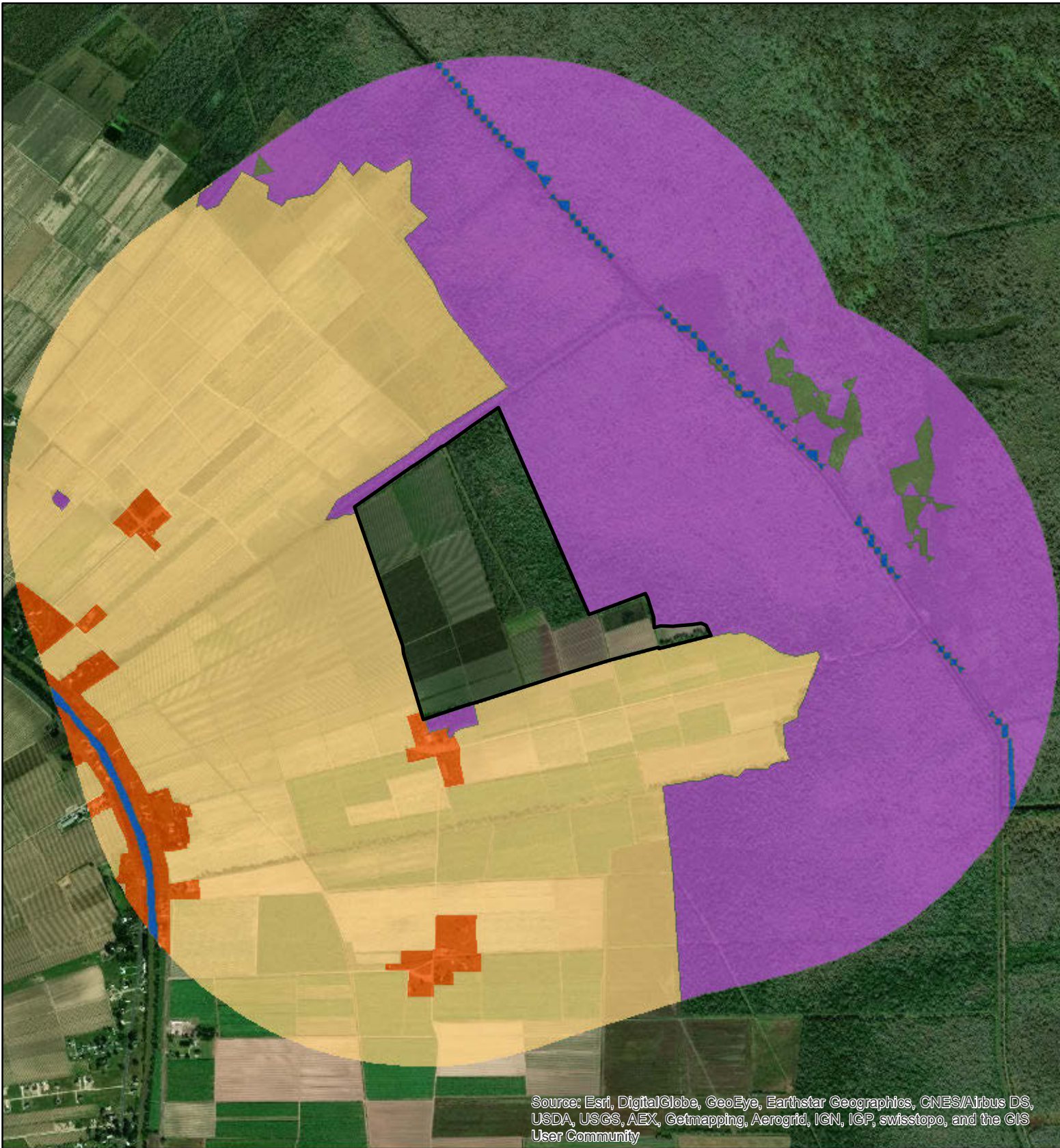
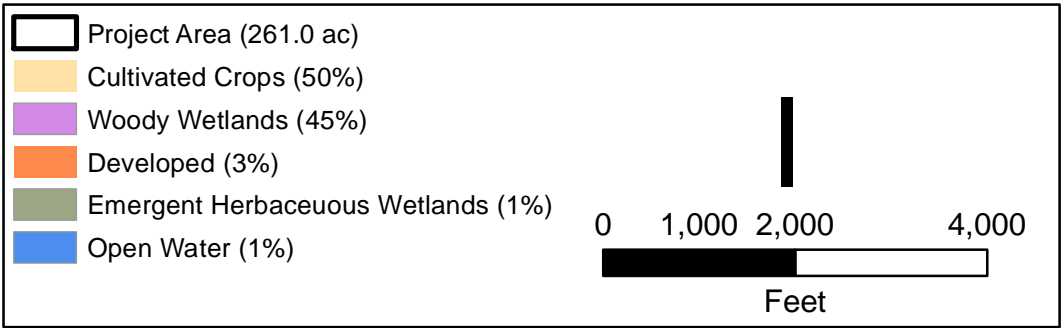
Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F06_Features	

FIGURE 6



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Upper Barataria Coastal Mitigation Bank

LAND USE AND LAND COVER

WITHIN 1-MILE

Assumption Parish, LA


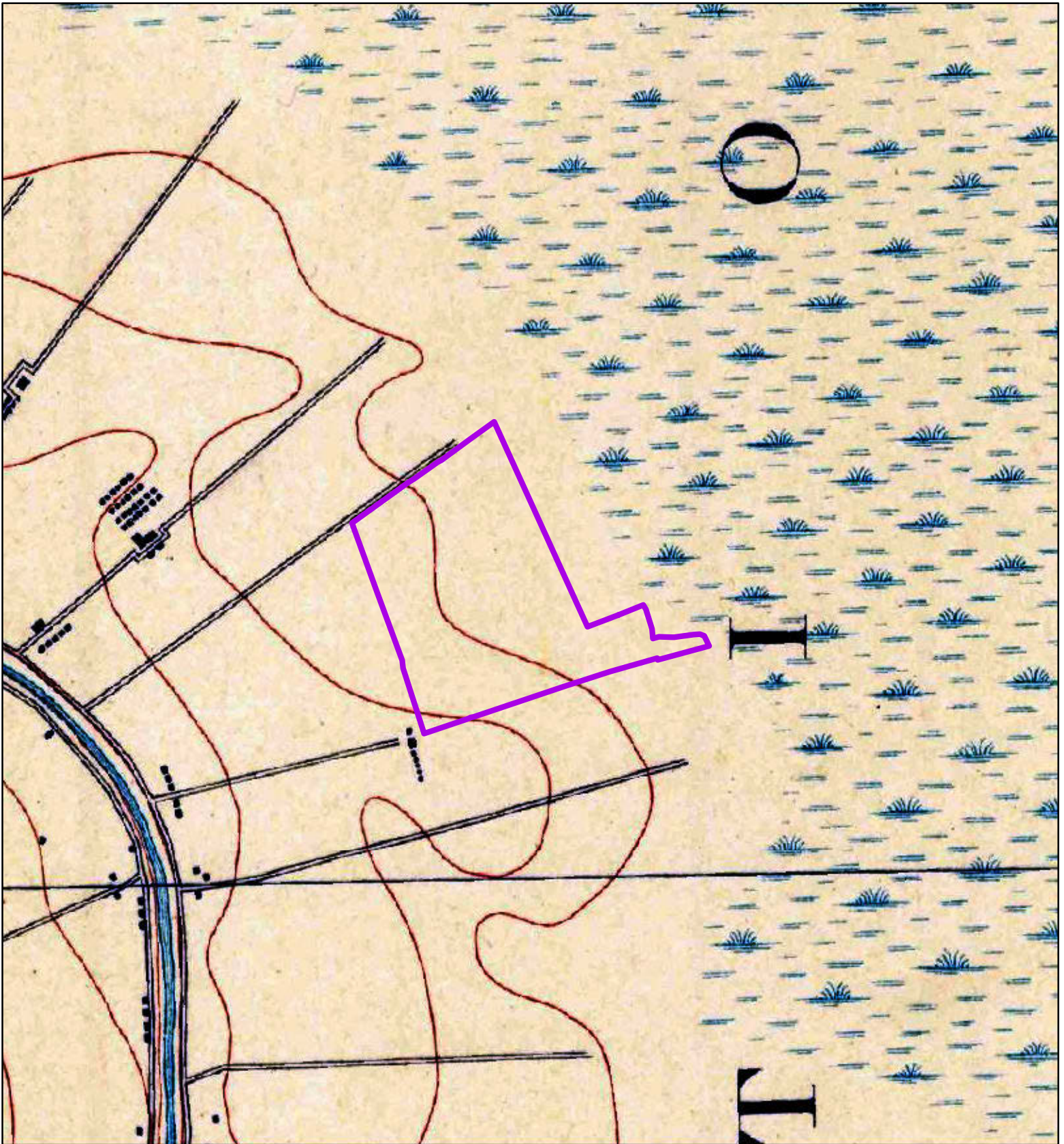

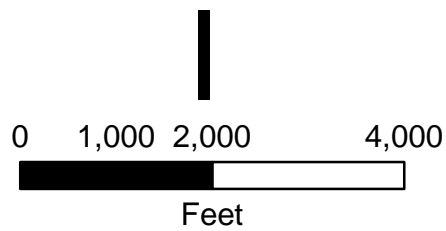
Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F07_LULC	

FIGURE 7



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

1892 TOPOGRAPHIC MAP

Assumption Parish, LA

Created : TSC/ARCVIEW

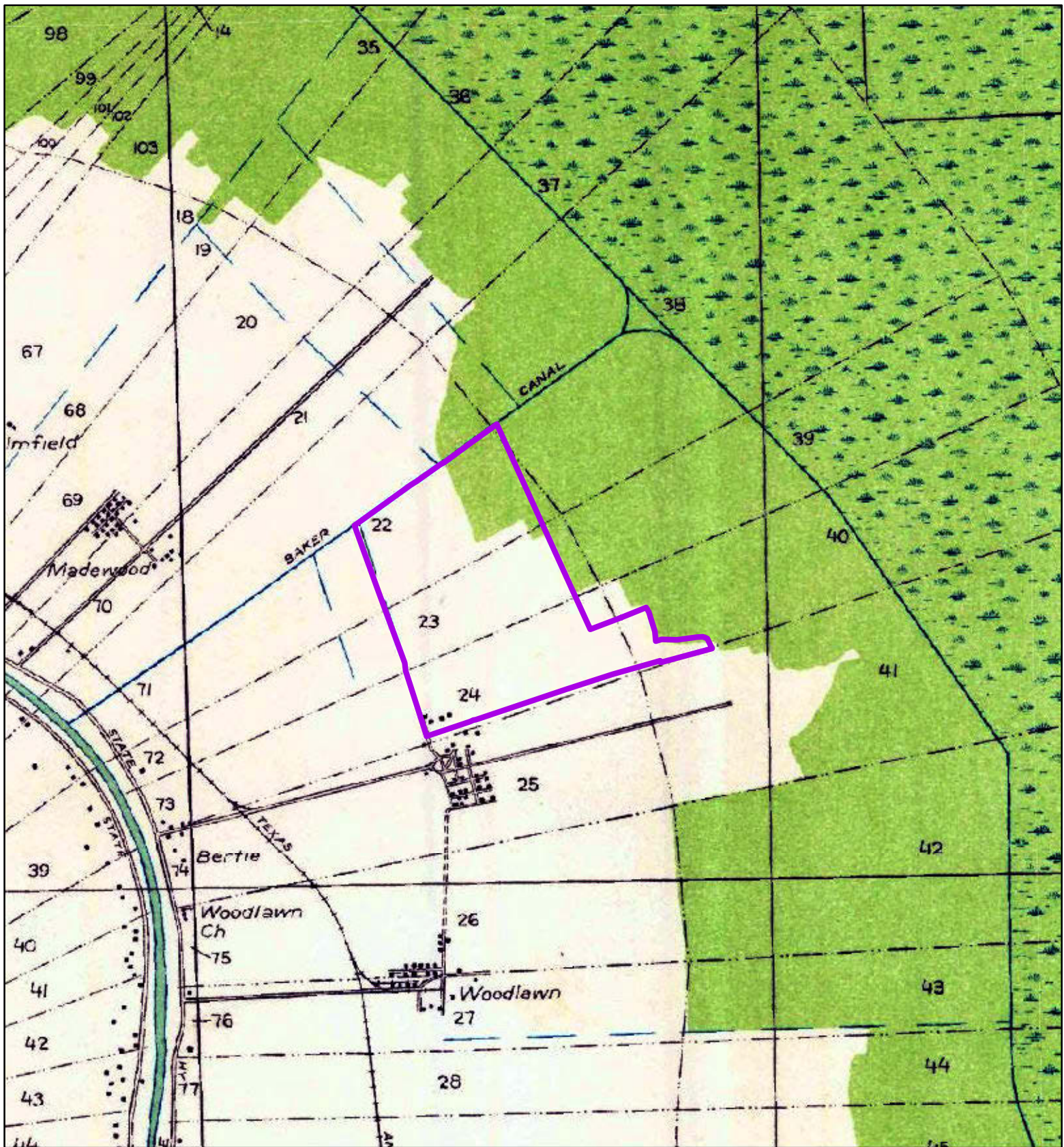
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Date : 06/13/2019

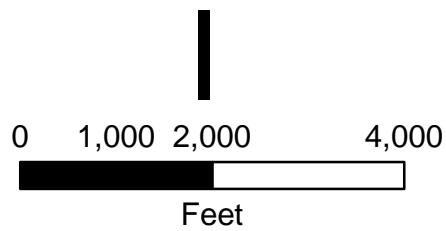
Map No. : F08_1892TOPO



FIGURE 8



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

1927 TOPOGRAPHIC MAP

Assumption Parish, LA

Created : TSC/ARCVIEW

Approved : LW


Date : 06/13/2019

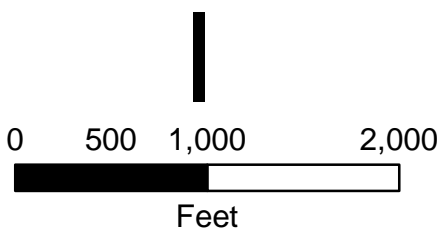
Map No. : F09_1927TOPO



FIGURE 9



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

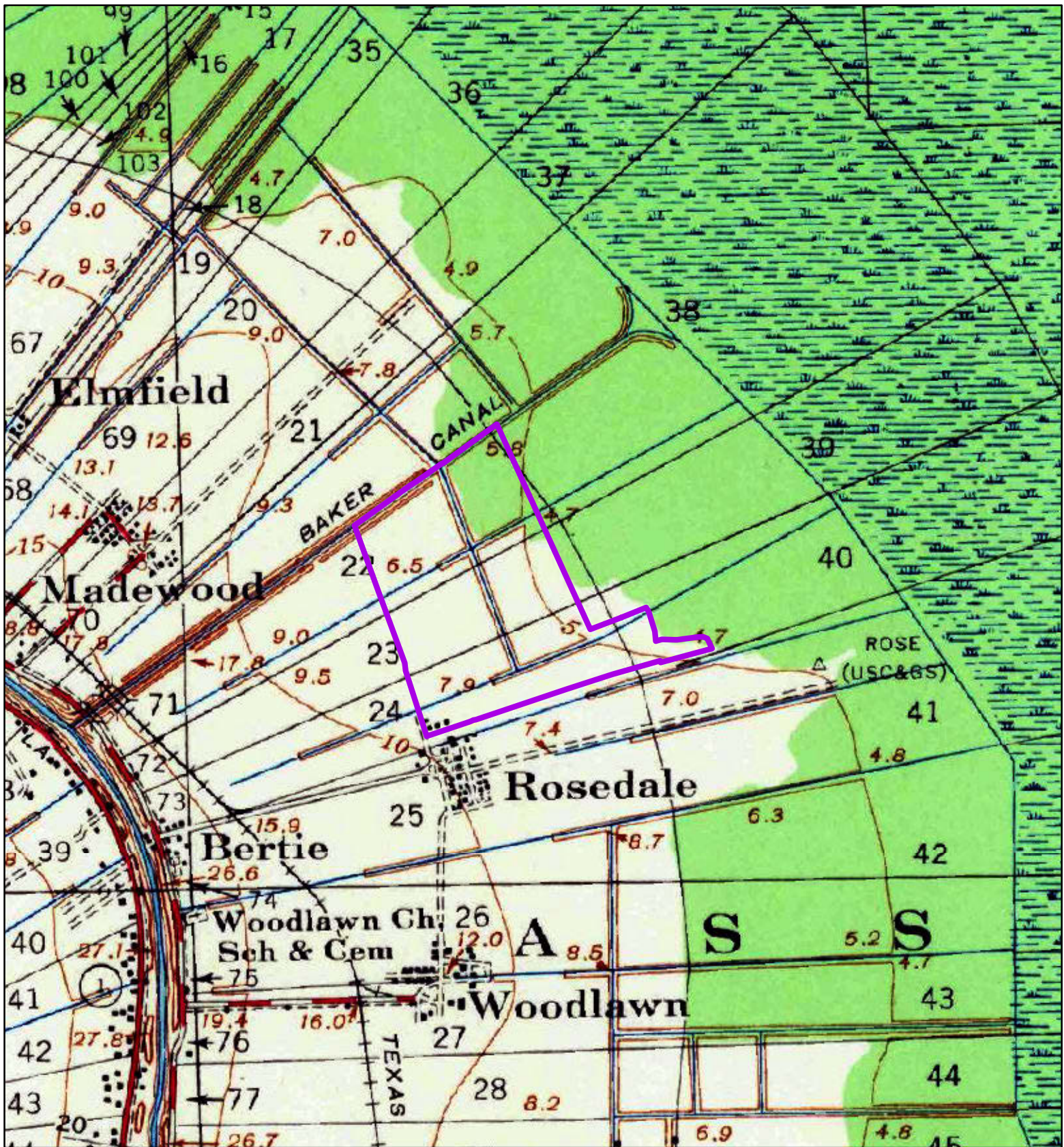
1940 AERIAL

Assumption Parish, LA

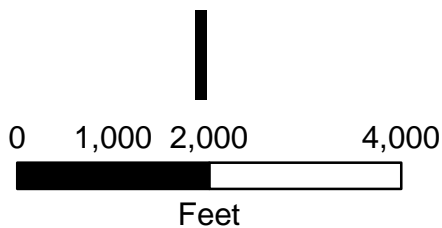
Created : TSC/ARCVIEW
Approved : LW
Date : 06/13/2019
Map No. : F10_1940Aerial



FIGURE 10



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

1955 TOPOGRAPHIC MAP

Assumption Parish, LA

Created : TSC/ARCVIEW

Approved : LW


Date : 06/13/2019

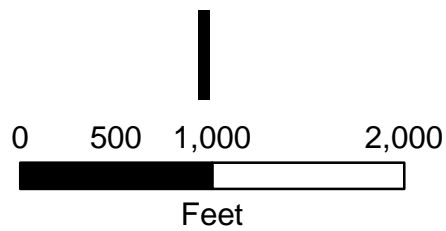
Map No. : F11_1955TOPO



FIGURE 11



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

1957 AERIAL

Assumption Parish, LA

Created : TSC/ARCVIEW

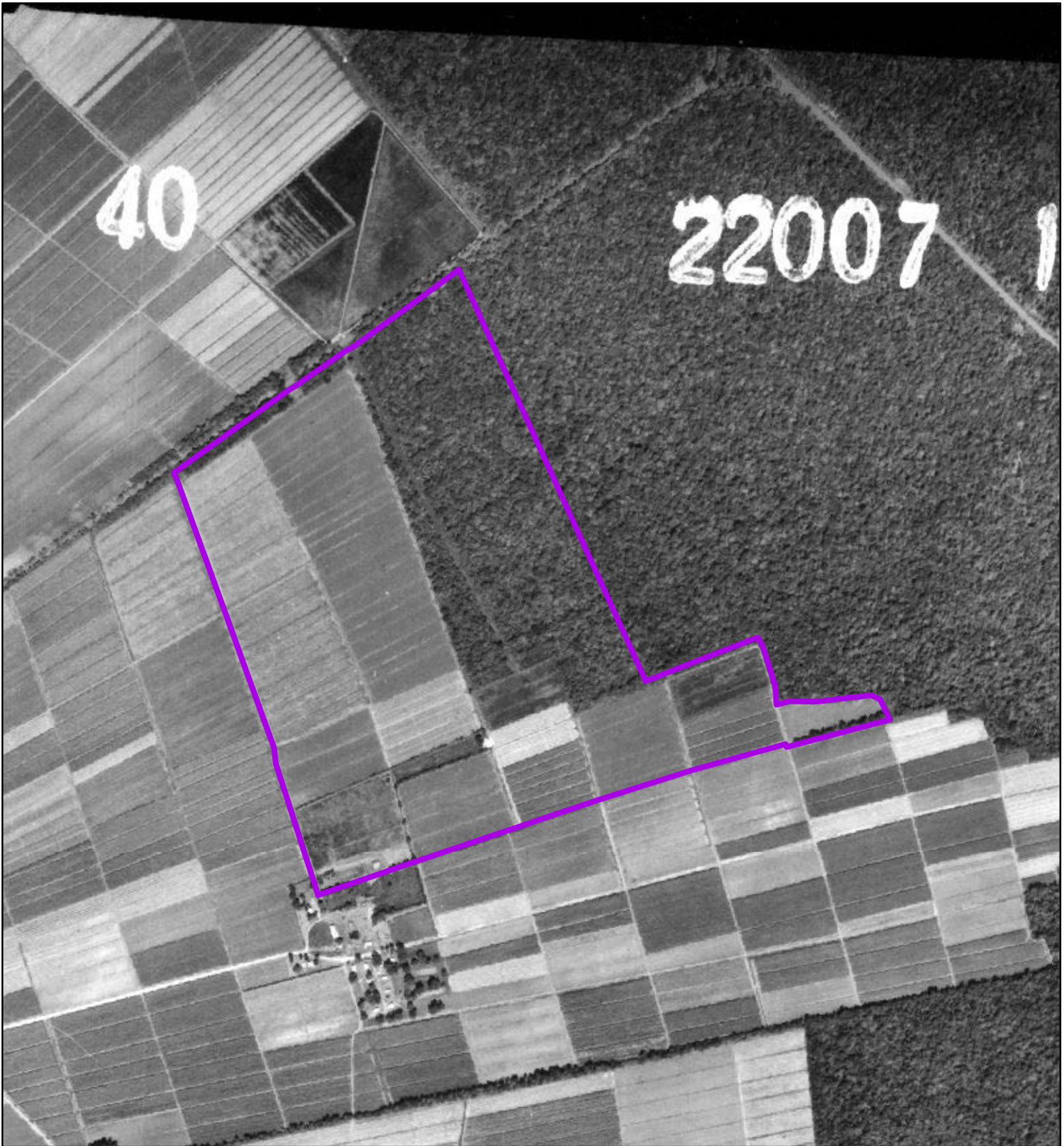
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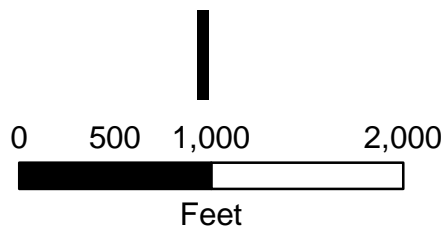
Map No. : F12_1957AERIAL



FIGURE 12



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

1980 AERIAL

Assumption Parish, LA

Created : TSC/ARCVIEW

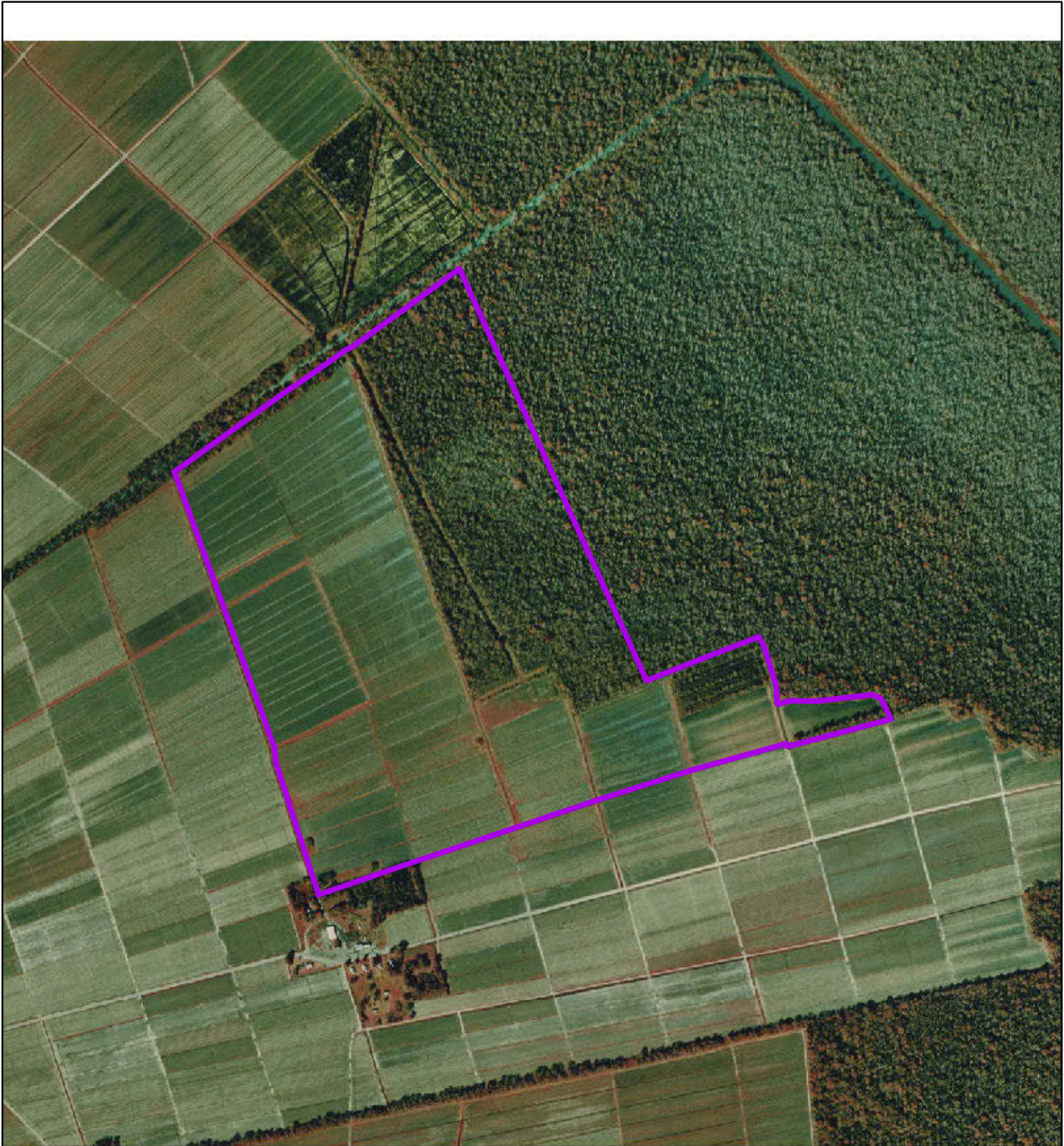
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Date : 06/13/2019

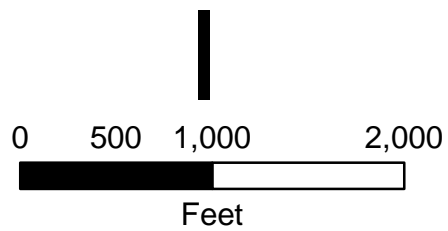
Map No. : F13_1980AERIAL



FIGURE 13



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

1998 AERIAL

Assumption Parish, LA

Created : TSC/ARCVIEW

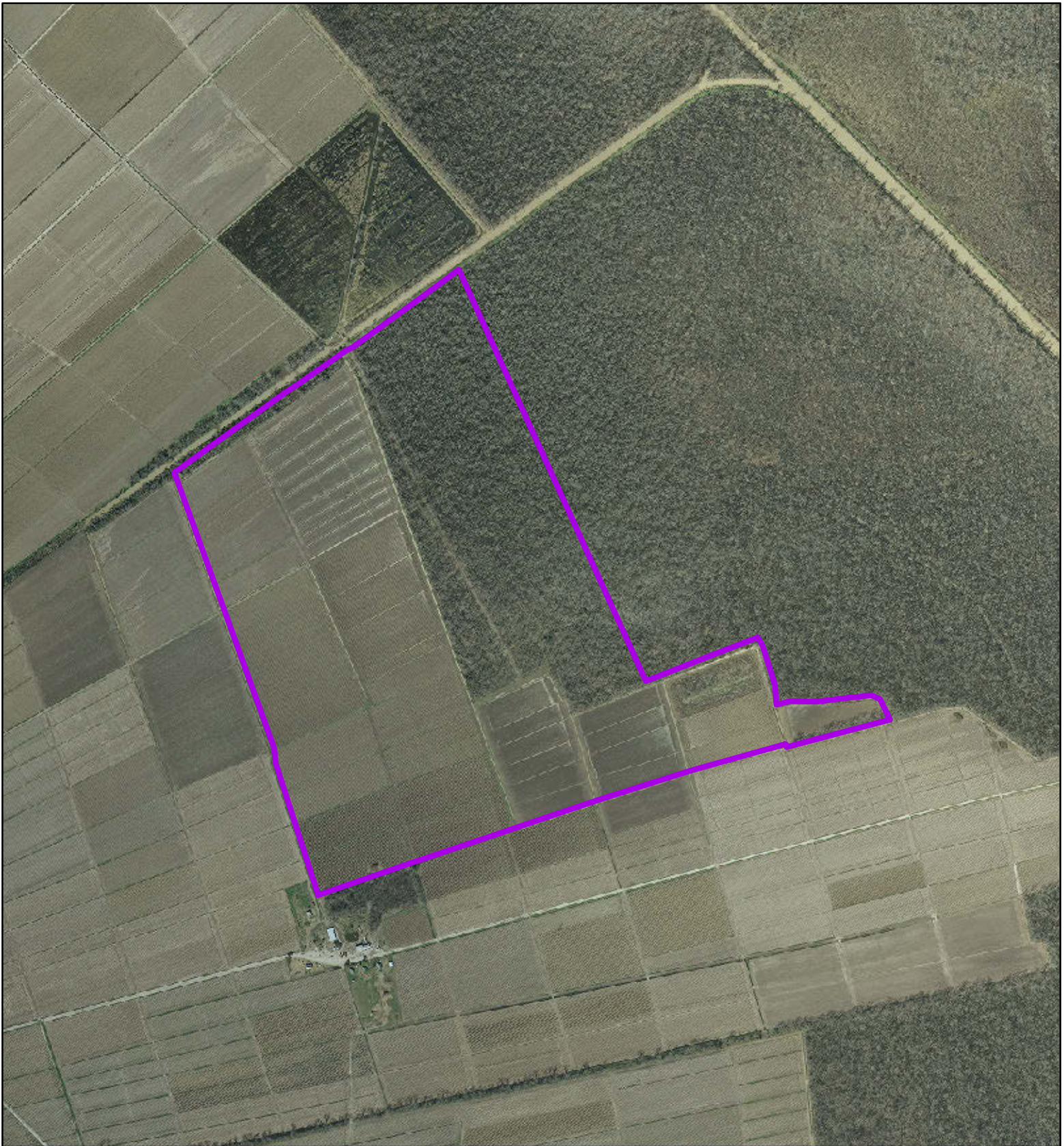
Approved : LW


Date : 06/13/2019

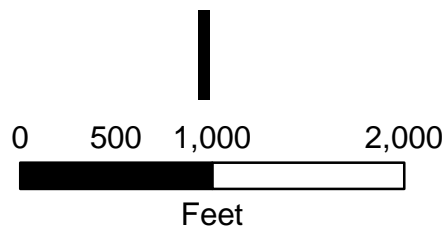
Map No. : F14_1998AERIAL



FIGURE 14



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

2010 AERIAL

Assumption Parish, LA

Created : TSC/ARCVIEW

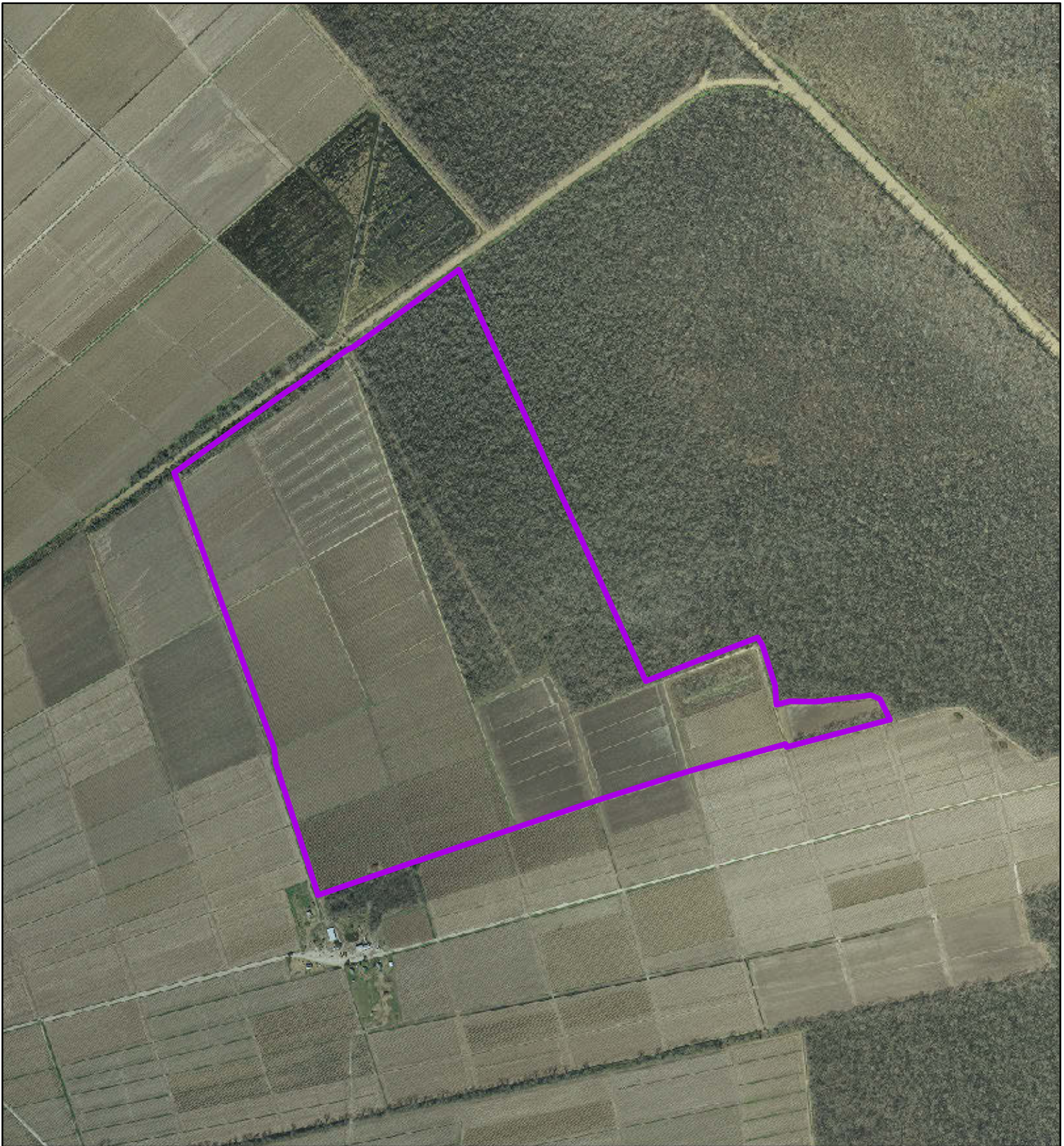
Approved : LW


Date : 06/13/2019

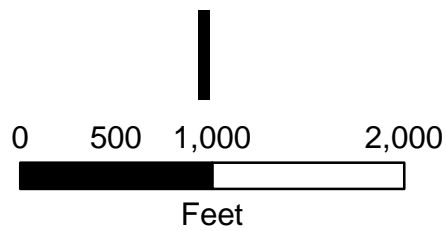
Map No. : F15_2010AERIAL



FIGURE 15



 Project Area (261.0 ac)



Upper Barataria Coastal Mitigation Bank

2017 AERIAL

Assumption Parish, LA

Created : TSC/ARCVIEW

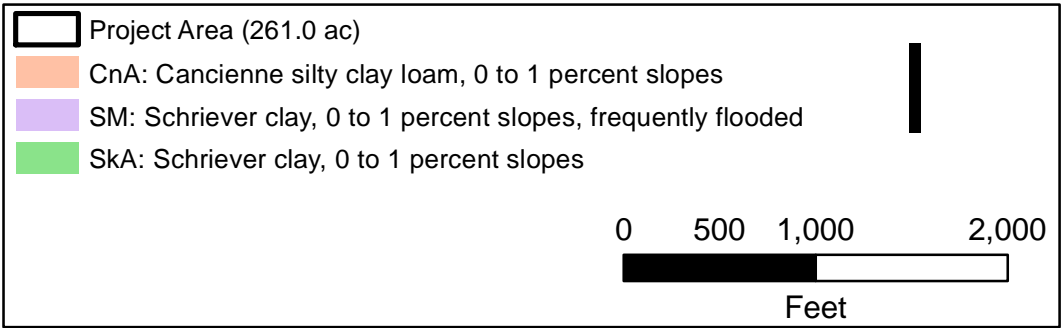
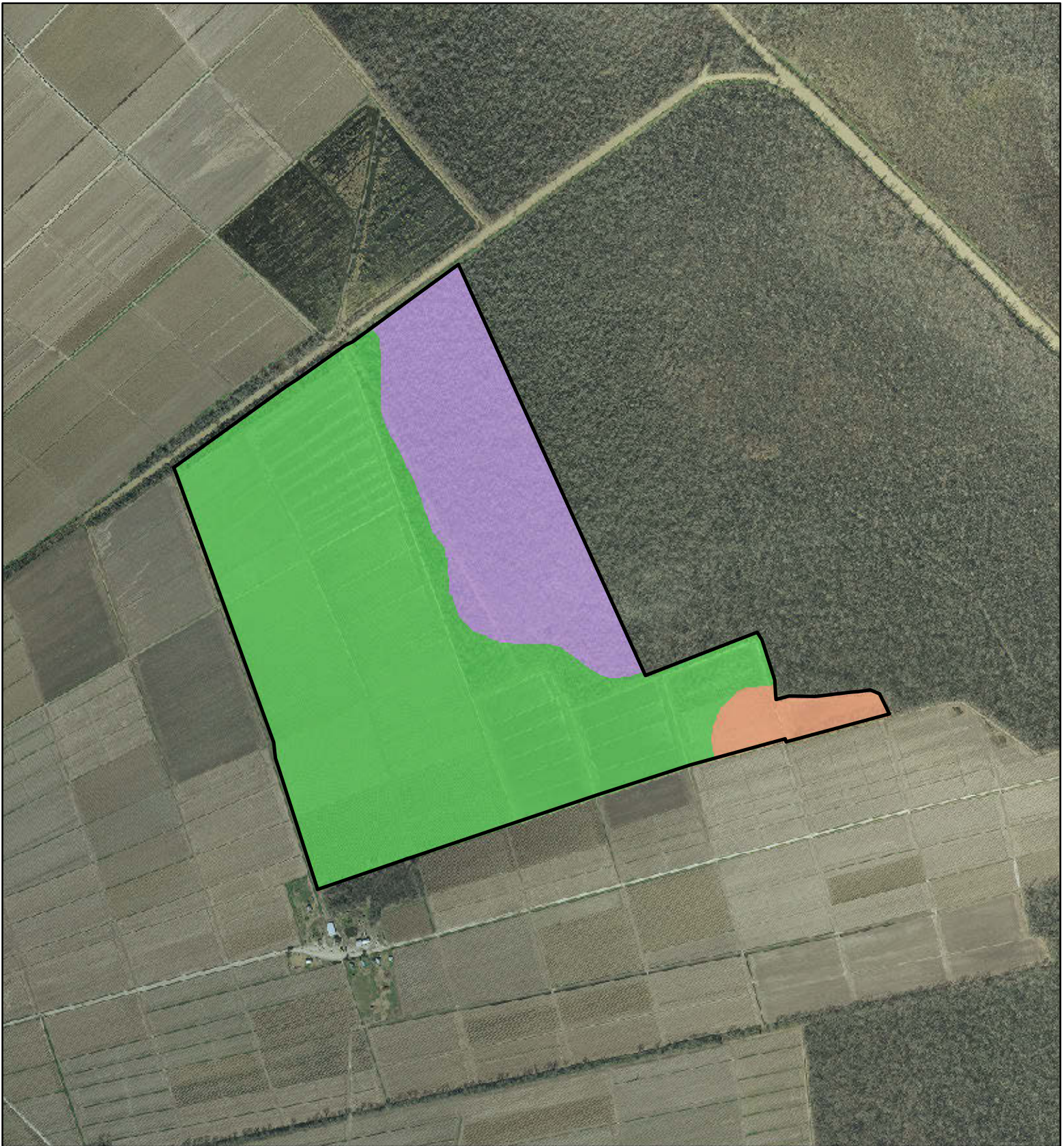
Approved : LW

Date : 06/13/2019

Map No. : F16_2017AERIAL



FIGURE 16



Upper Barataria Coastal Mitigation Bank

SOIL MAP UNITS

Assumption Parish, LA


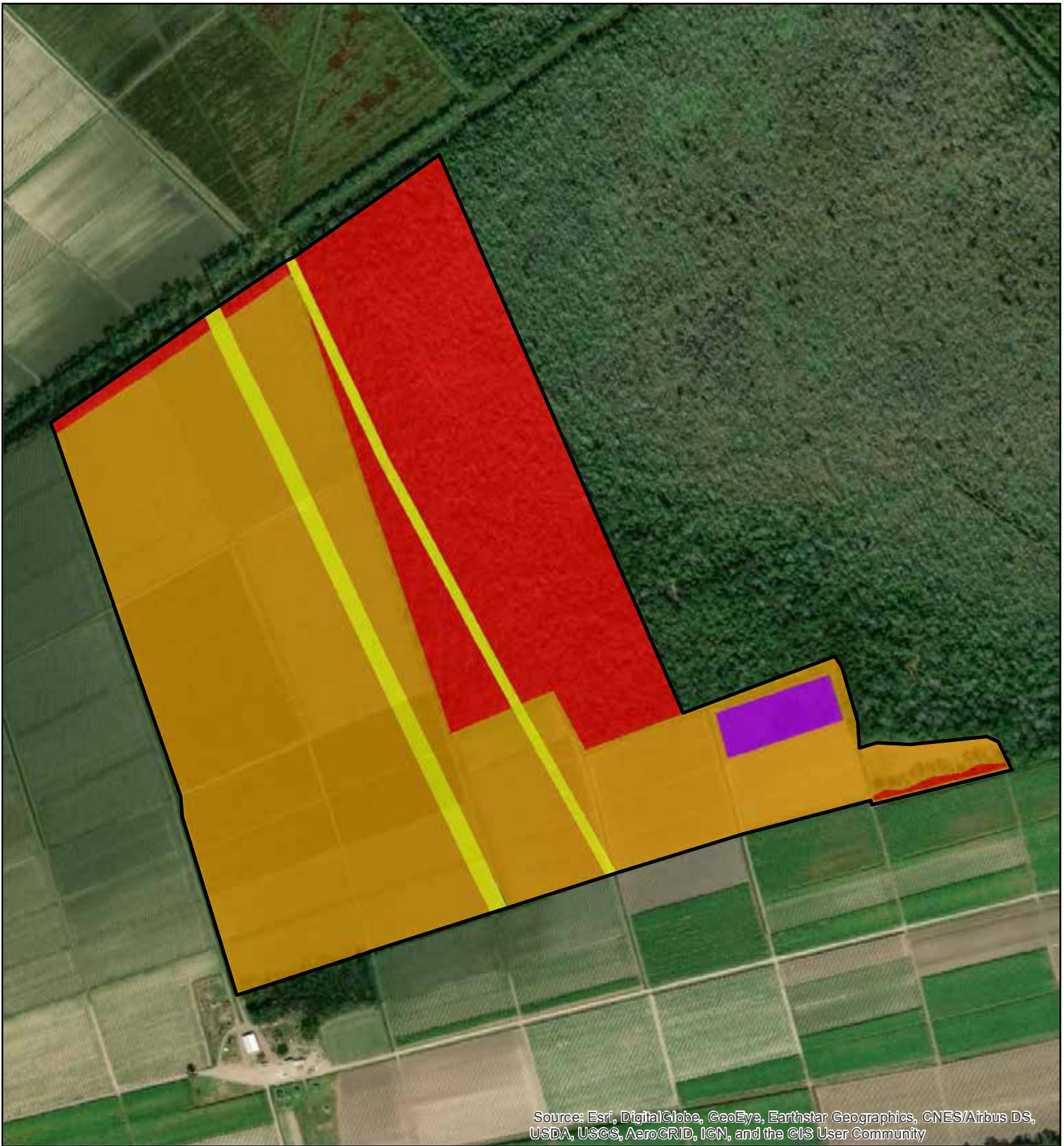
Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F17_Soils	

FIGURE 17



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



Upper Barataria Coastal Mitigation Bank

EXISTING LAND USE

Assumption Parish, LA


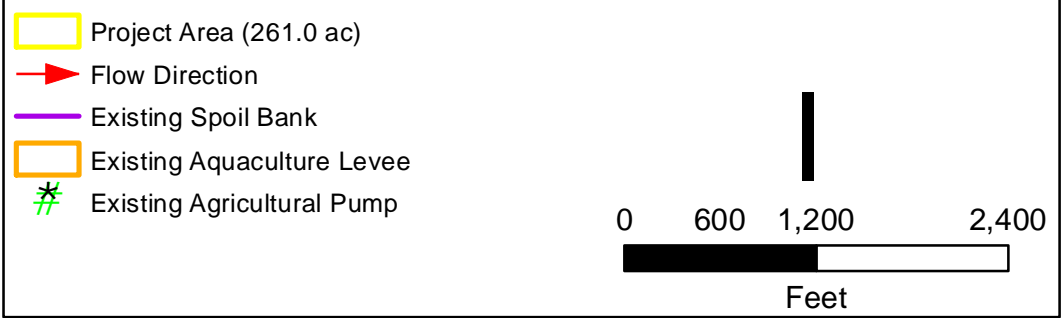
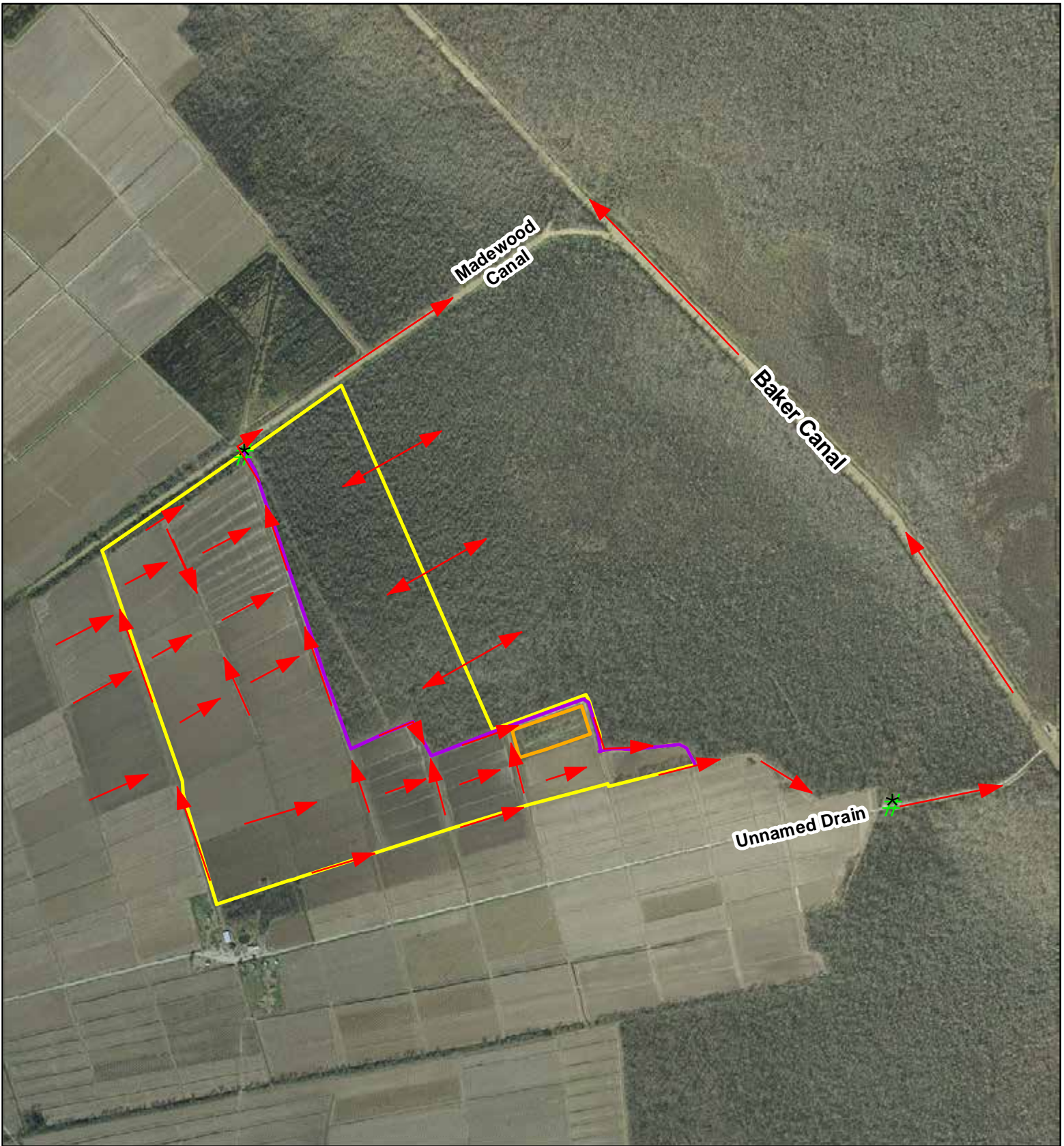
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Approved : LW	
Date : 06/13/2019	
Map No. : F18_ExCover	

FIGURE 18



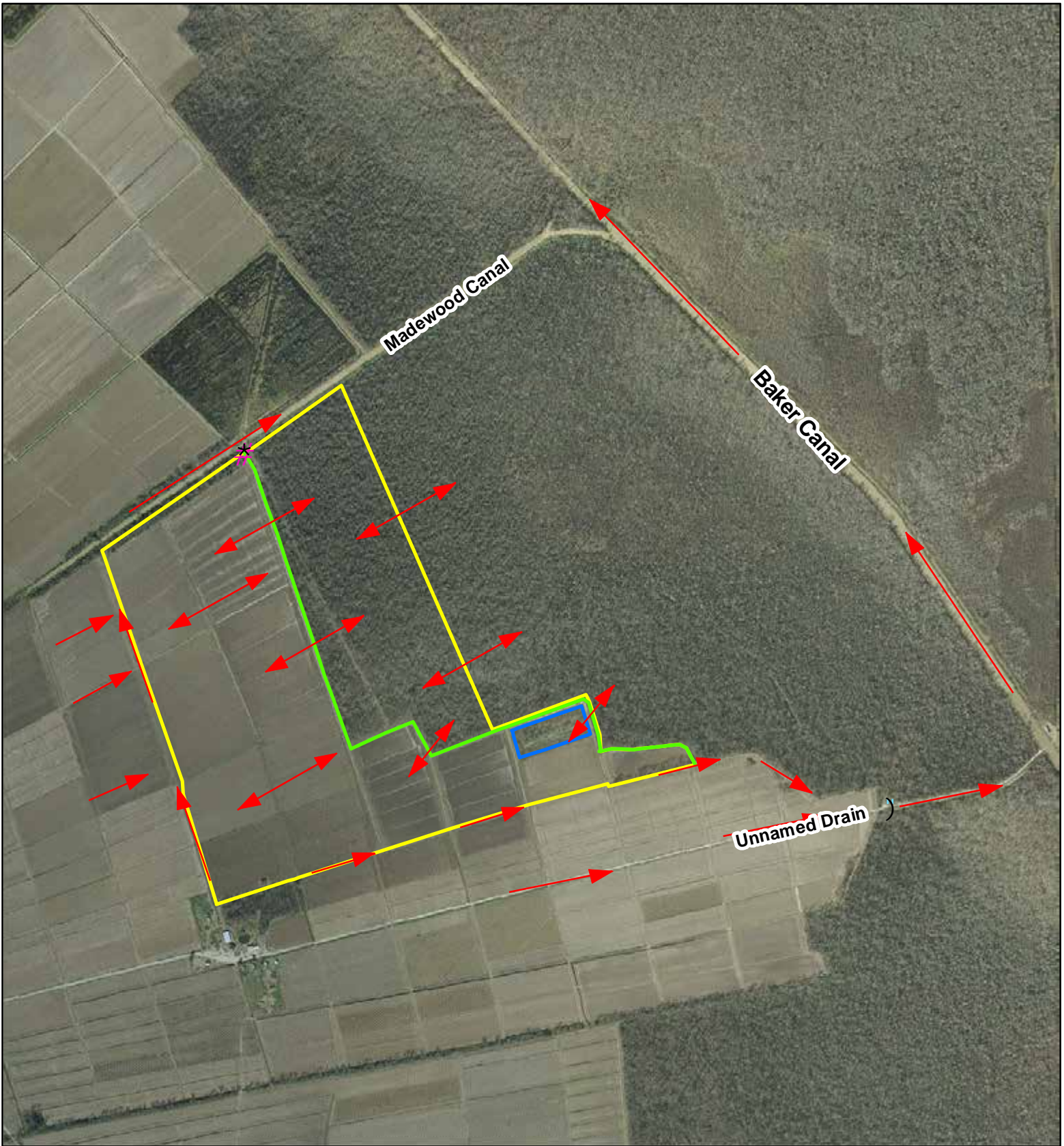
Upper Barataria Coastal Mitigation Bank

EXISTING HYDROLOGY

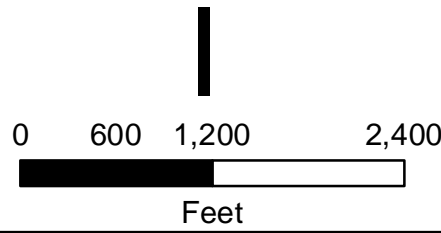
Assumption Parish, LA

Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F19_ExHydro	

FIGURE 19



- Project Area (261.0 ac)
- ➔ Flow Direction
- Existing Spoil Bank to be Degraded
- Aquaculture Levee to be Degraded
-) Existing Pump to Remain
- ✱ Existing Pump to be Removed



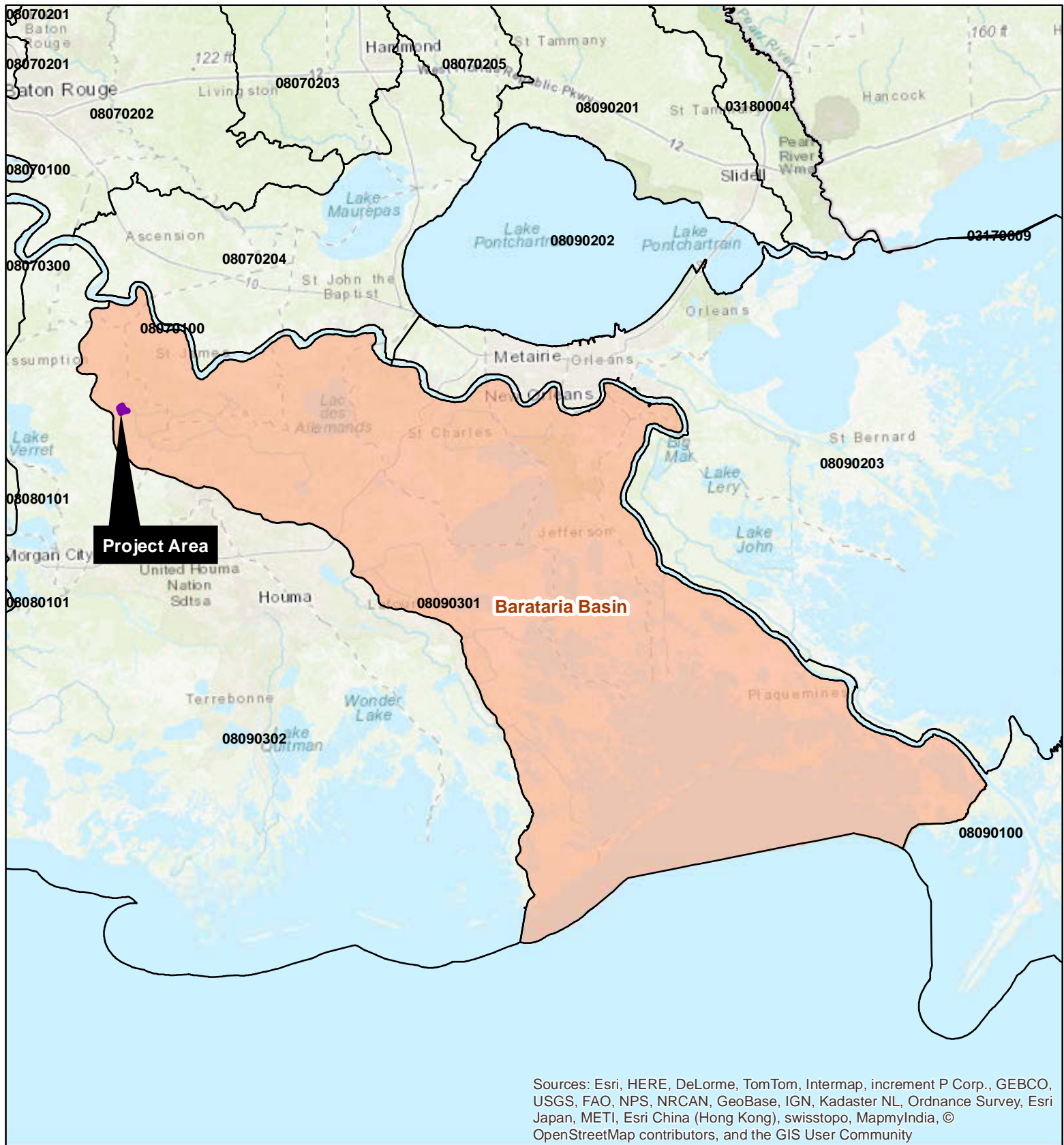
Upper Barataria Coastal Mitigation Bank

PROPOSED HYDROLOGY

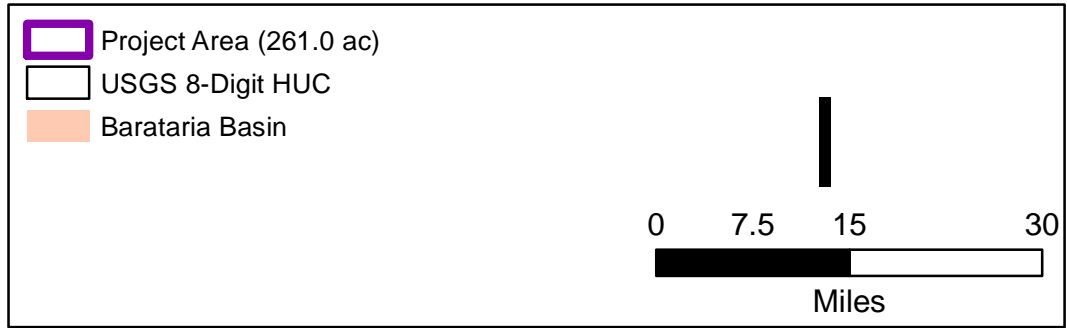
Assumption Parish, LA

Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F20_PropHydro	

FIGURE 20



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Upper Barataria Coastal Mitigation Bank

Bank Service Area

Assumption Parish, LA


Created : TSC/ARCVIEW	
Approved : LW	
Date : 06/13/2019	
Map No. : F21_ServiceArea	

FIGURE 21

Attachment B

Preliminary Jurisdictional Determination



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVE
NEW ORLEANS LA 70118-3651

May 17, 2019

Operations Division
Surveillance and Enforcement Section

Mr. Jace Jarreau
Delta Land Services
1090 Cinclare Drive
Port Allen, LA 70767

Dear Mr. Jarreau:

Reference is made to your request, on behalf of Rosedale Land Company, for a U.S. Army Corps of Engineers' jurisdictional determination on property located in Sections 22, 23, and 24, Township 13 South, Range 15 East, Assumption Parish, Louisiana (enclosed map). Specifically, this property is identified as Rosedale Land Company.

A field inspection of the property was conducted on April 29, 2019. Based on the results of this investigation and the information provided with your request, we have determined that part of the property is wetland and may be subject to Corps' jurisdiction. The approximate limits of the wetland are designated in red on the map. A Department of the Army (DA) permit under Section 404 of the Clean Water Act will be required prior to the deposition or redistribution of dredged or fill material into wetlands that are waters of the United States. Additionally, a DA permit will be required if you propose to deposit dredged or fill material into non-wetland waters subject to Corps' jurisdiction. Non-wetland waters that may be subject to Corps' jurisdiction are indicated in blue on the map.

You and your client are advised that this preliminary jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision prior to the expiration date or the District Commander has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

Please be advised that this property is in the Louisiana Coastal Zone and a Coastal Use Permit may be required prior to initiation of any activities on this site. For additional information, contact Ms. Christine Charrier, Office of Coastal Management, Louisiana Department of Natural Resources at (225) 342-7953.

This jurisdictional determination has been conducted to identify the limits of the Corps' Clean Water Act jurisdiction for the particular site identified in your request. This jurisdictional determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If the property owner or tenant is a USDA farm participant, or anticipates participation in USDA programs, contact the local office of the Natural Resources Conservation Service prior to starting work.

Should there be any questions concerning these matters, please contact Mr. Jon Barmore at (504) 862-1704 and reference our Account No. MVN-2019-00034-SG. If you have specific questions regarding the permit process or permit applications, please contact our Central Evaluation Section at (504) 862-1581.

Sincerely,
OBERLIES.BRIAN.MC
INNIS.1230779739
for Martin S. Mayer
Chief, Regulatory Branch

Digitally signed by
OBERLIES.BRIAN.MC
INNIS.1230779739
Date: 2019.05.17 10:24:17 -05'00'




Enclosures



**US Army Corps of Engineers
Preliminary Jurisdictional Determination**



USACE
 FIELD, 29 APRIL 2019
BOTANIST MR. JON BARMORE
FOR Delta Land Services

ACCOUNT # MVN-2019-00034-SG

	Wetlands
	Non-wetland waters
	JD Review Area


 0 400 800 1,600

 Feet

Rosedale Plantation
WETLAND DELINEATION MAP
Assumption Parish, LA


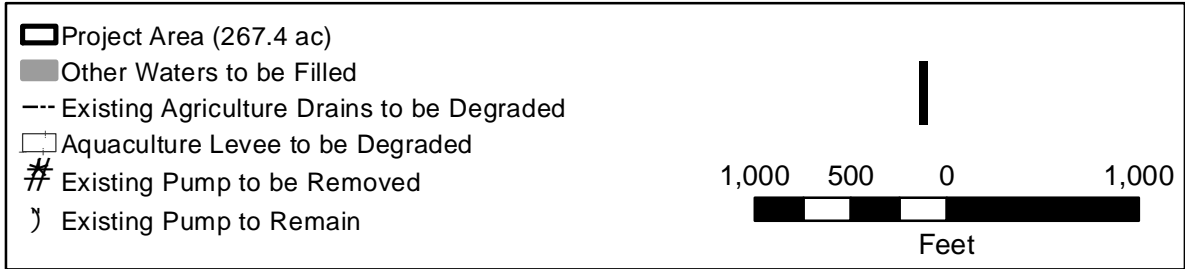
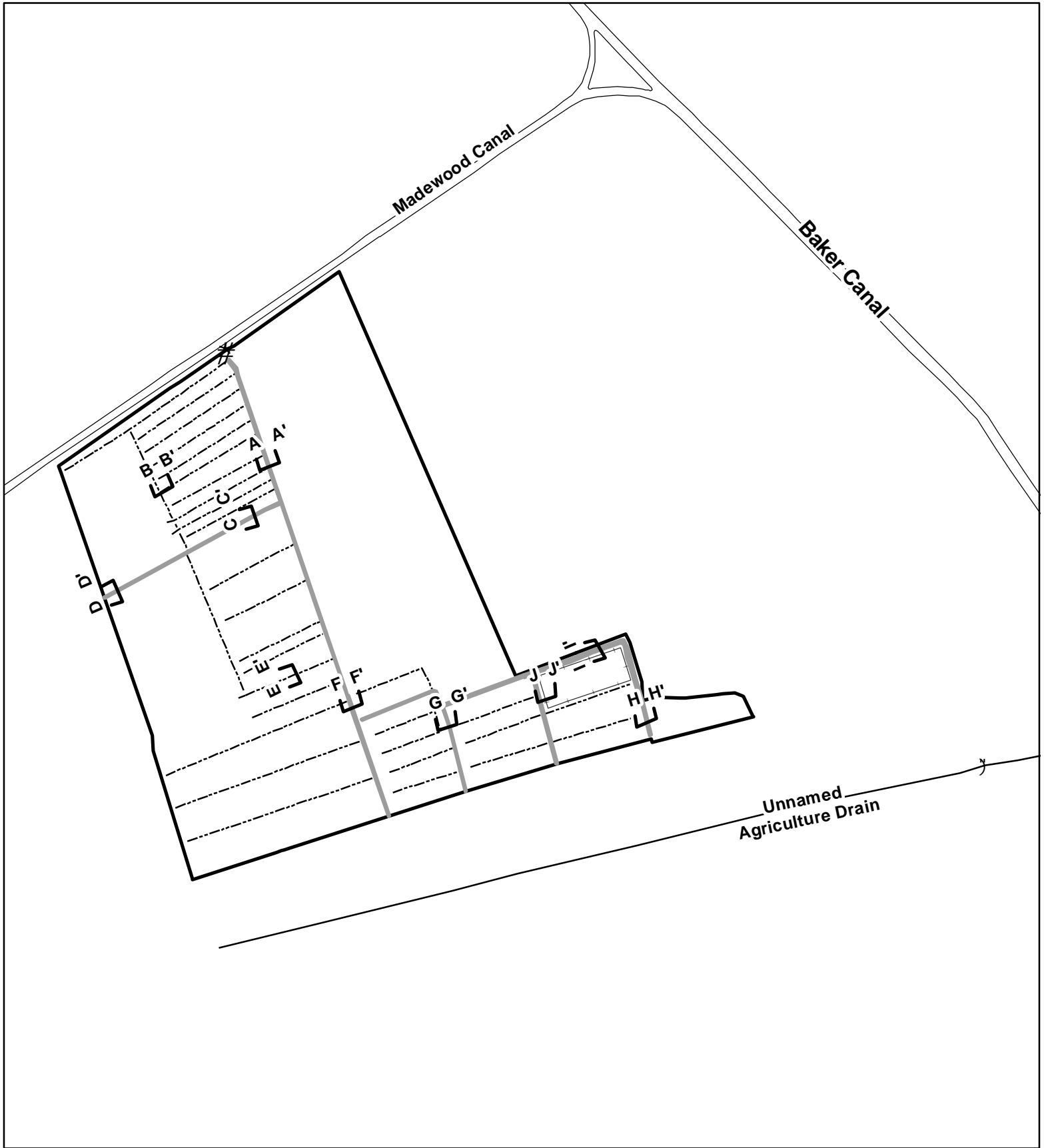
Created : TSC/ARCVIEW	
Approved : JMJ	
Date : 12/12/2018	
Map No. : F07_WLD	

FIGURE 6

Attachment C

Hydrology Restoration Typical Drawings



Upper Barataria Coastal
Mitigation Bank

**HYDROLOGY RESTORATION
PLAN VIEW**

Assumption Parish, Louisiana

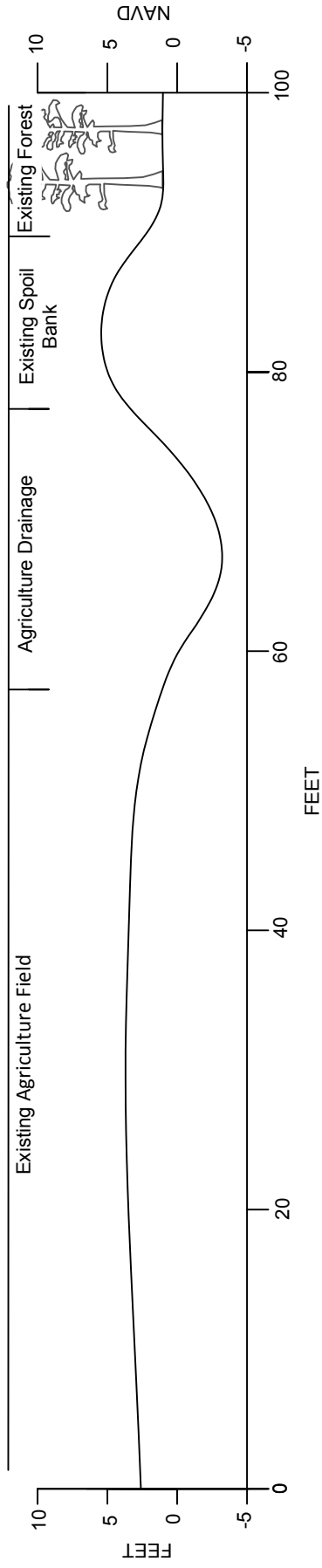
Created : TSC/AM10.2	
Approved : DB	
Date : 6/24/2019	
Map No. : FC1_PlanView	

FIGURE C1

A

A'

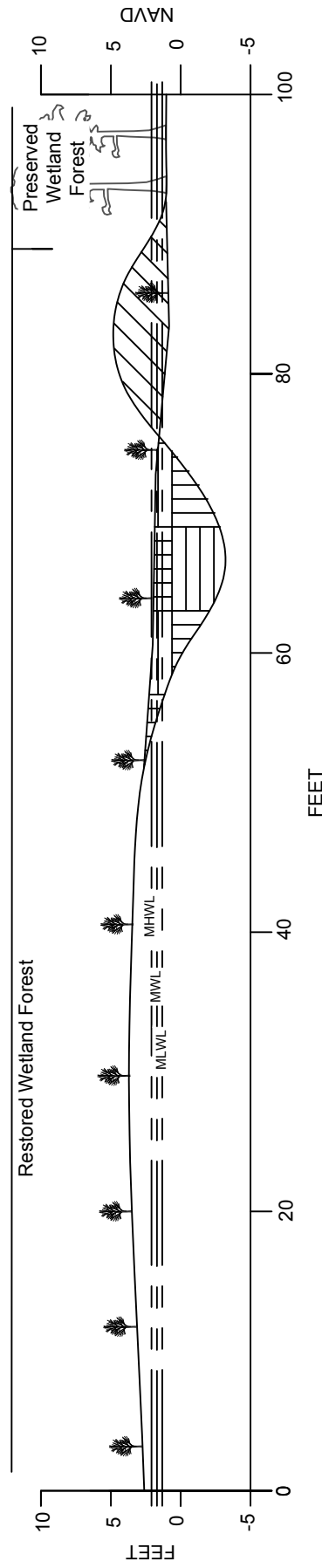
Existing Cross-Section A



A

A'

Proposed Cross-Section A



Excavation



Earthen Fill

MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:
 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
 2) All elevations are based on GEOID 12A.

Upper Barataria Coastal Mitigation Bank

CROSS-SECTION A-A'

Assumption Parish, Louisiana

Created: TSC/AutoCAD

Approved: DB

Date: 6/3/2019

Dwg. No.: Xsection



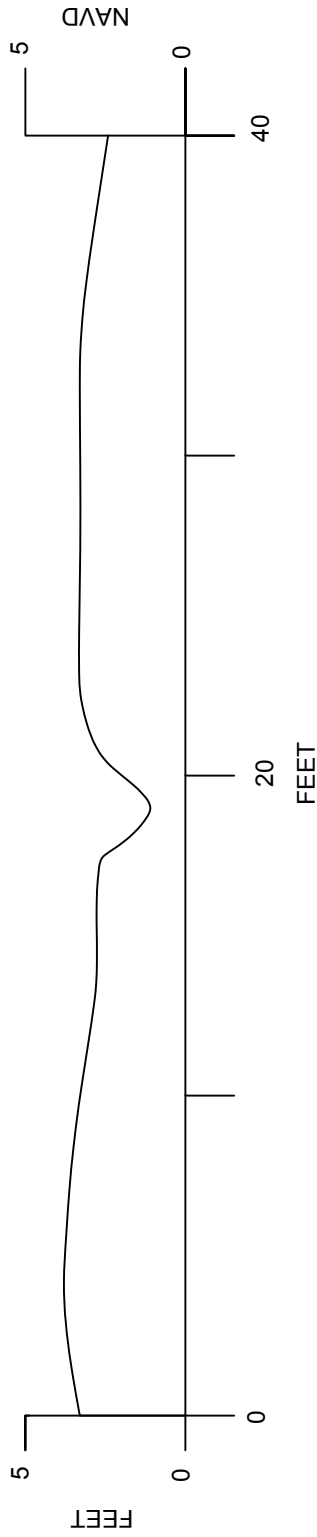
Figure C2

B

B'

Existing Cross-Section B

Existing Agriculture Field

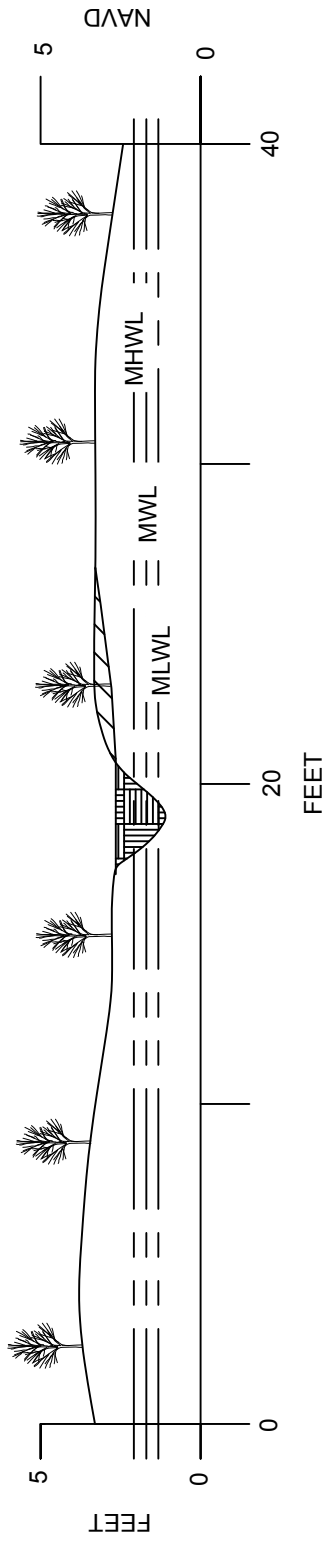


B

B'

Existing Cross-Section B

Restored Wetland Forest



Excavation

Earthen Fill

MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:
 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
 2) All elevations are based on GEOID 12A.

Upper Barataria Coastal
 Mitigation Bank

CROSS-SECTION B-B'

Assumption Parish, Louisiana

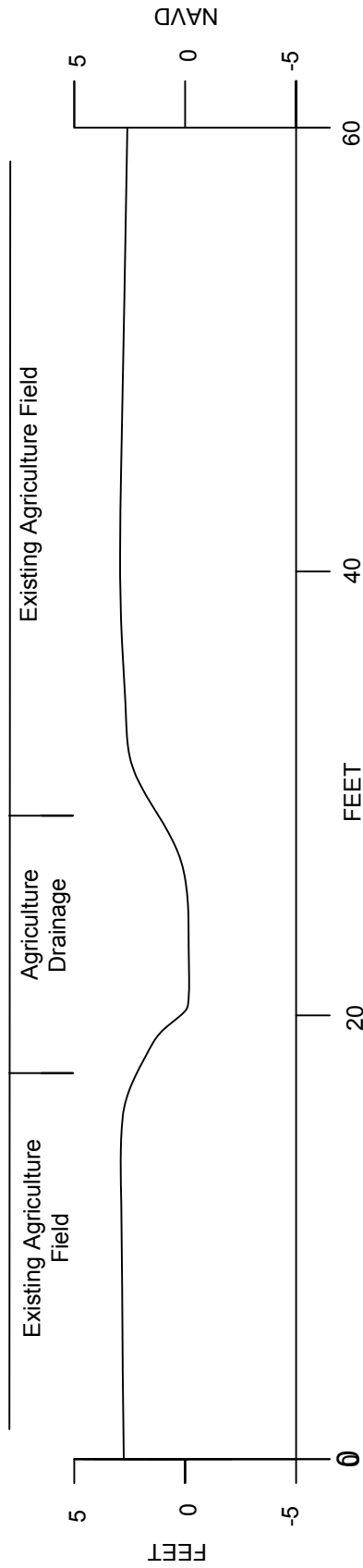
Created:	TSC/AutoCAD
Approved:	DB
Date:	6/3/2019
Dwg. No.:	Xsection



Figure C3

C

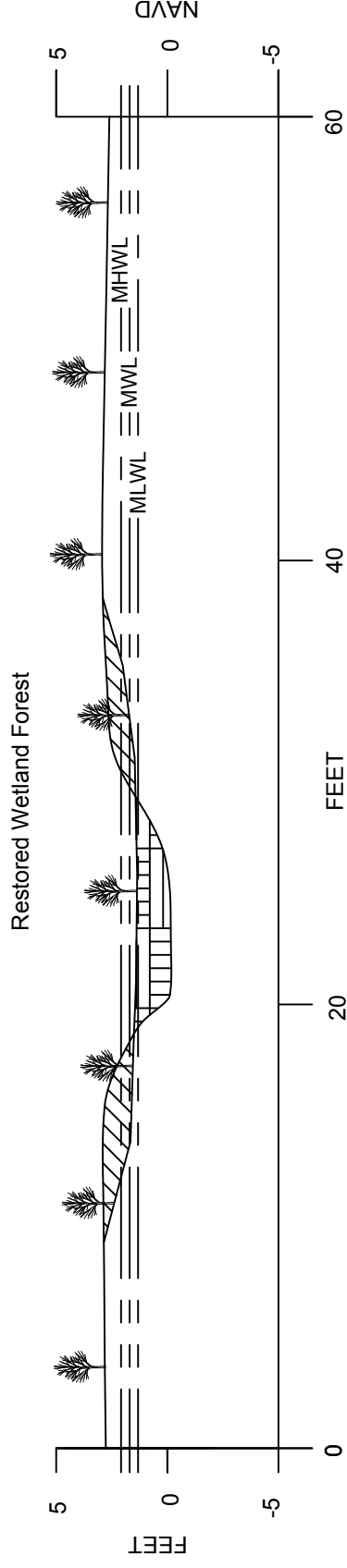
Existing Cross-Section C



C'

C

Proposed Cross-Section C



Excavation



Earthen Fill

MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:
 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
 2) All elevations are based on GEOID 12A.

**Upper Barataria Coastal
 Mitigation Bank**

CROSS-SECTION C-C'

Assumption Parish, Louisiana

Created: TSC/AutoCAD

Approved: DB

Date: 6/3/2019

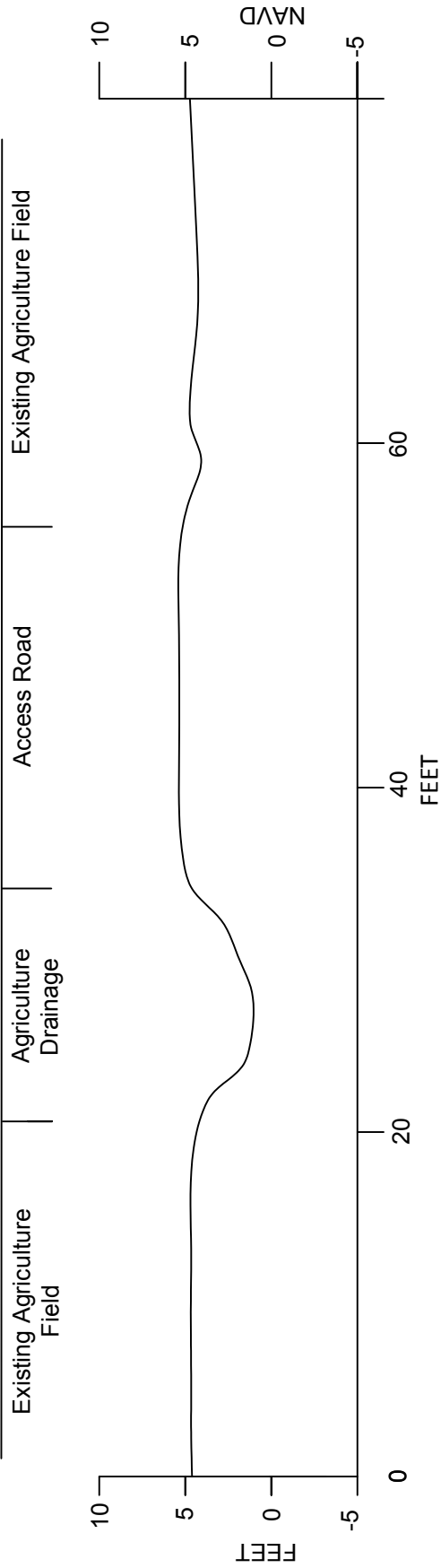
Dwg. No.: Xsection



Figure C4

D

Existing Cross-Section D

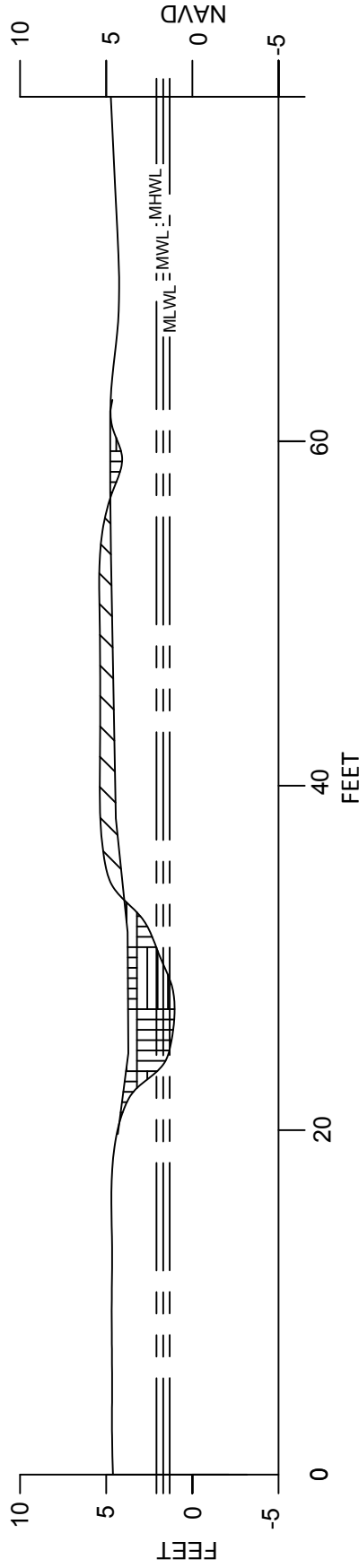


D'

D

Proposed Cross-Section D

Restored Wetland Forest



D'

Upper Barataria Coastal Mitigation Bank

CROSS-SECTION D-D'

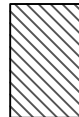
Assumption Parish, Louisiana

Created: TSC/AutoCAD

Approved: DB

Date: 6/3/2019

Dwg. No.: Xsection



Excavation



Earthen Fill

MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:

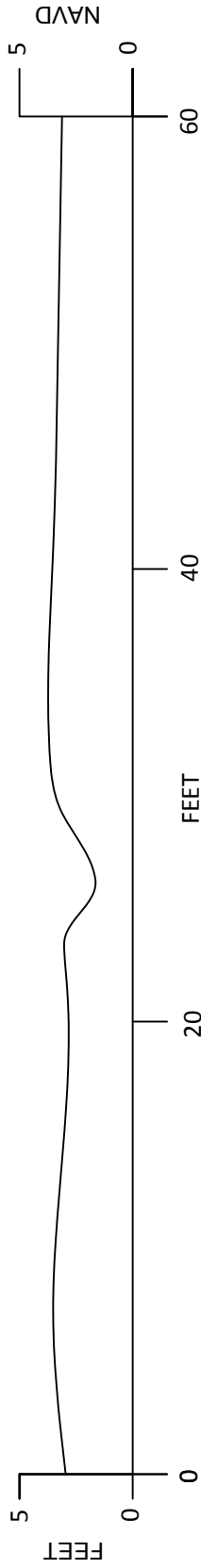
- 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
- 2) All elevations are based on GEOID 12A.

Figure C5

E

Existing Cross-Section E

Existing Agriculture Field

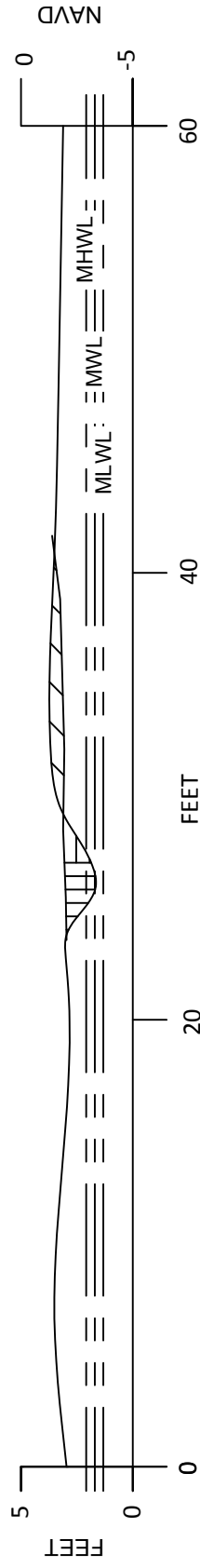


E'

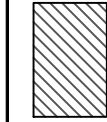
E

Proposed Cross-Section E

Restored Wetland Forest



E'



Excavation



Earthen Fill

MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:

- 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
- 2) All elevations are based on GEOID 12A.

Upper Barataria Coastal
 Mitigation Bank

CROSS-SECTION E-E'

Assumption Parish, Louisiana

Created: TSC/AutoCAD

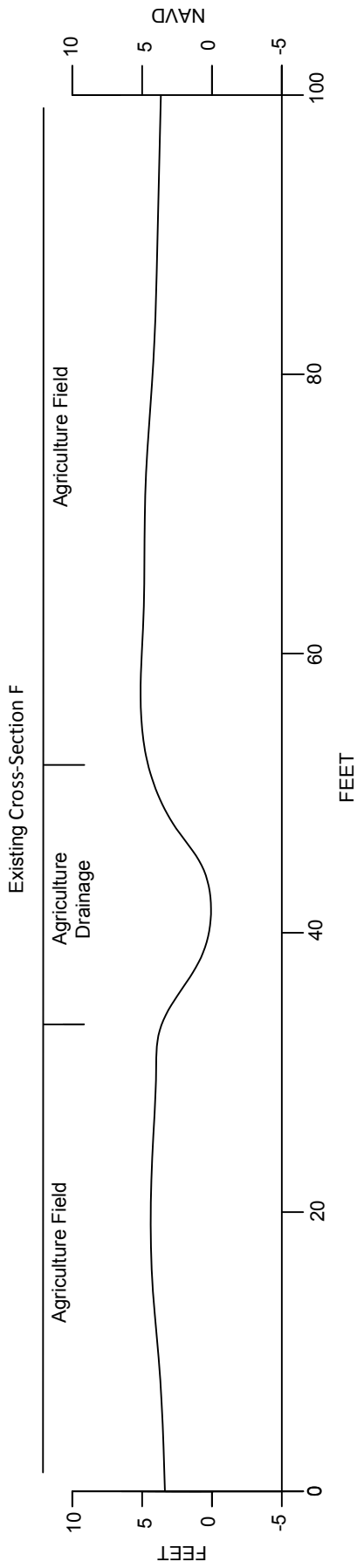
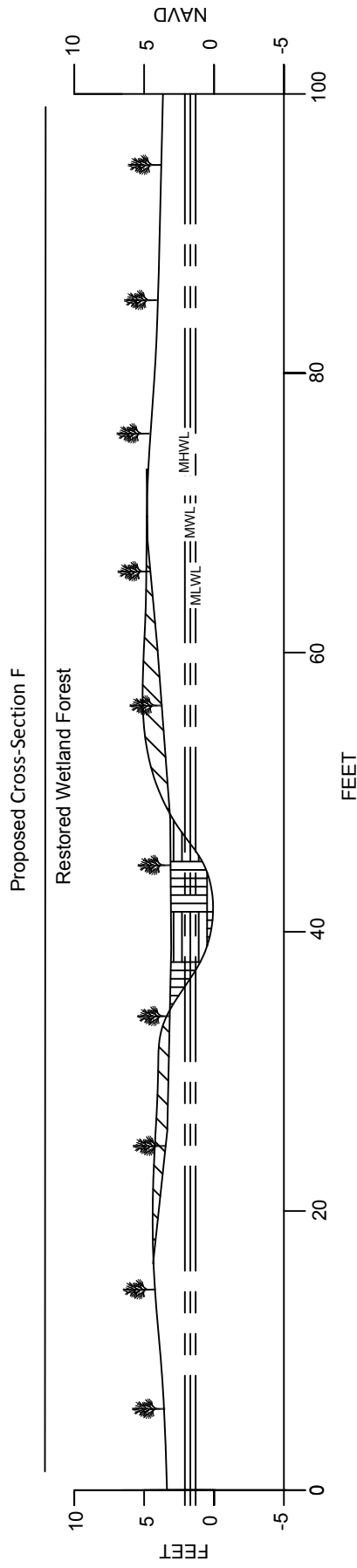
Approved: DB

Date: 6/3/2019

Dwg. No.: Xsection



Figure C6

F**F**

Excavation



Earthen Fill



MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:
 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
 2) All elevations are based on GEOID 12A.

Upper Barataria Coastal Mitigation Bank

CROSS-SECTION F-F'

Assumption Parish, Louisiana

Created: TSC/AutoCAD

Approved: DB

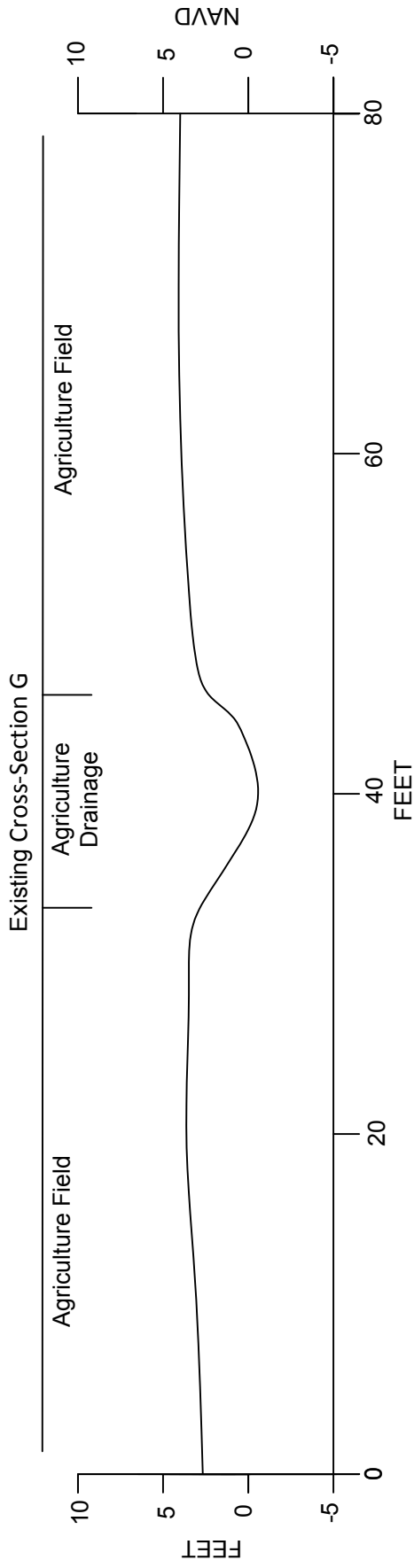
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Dwg. No.: Xsection



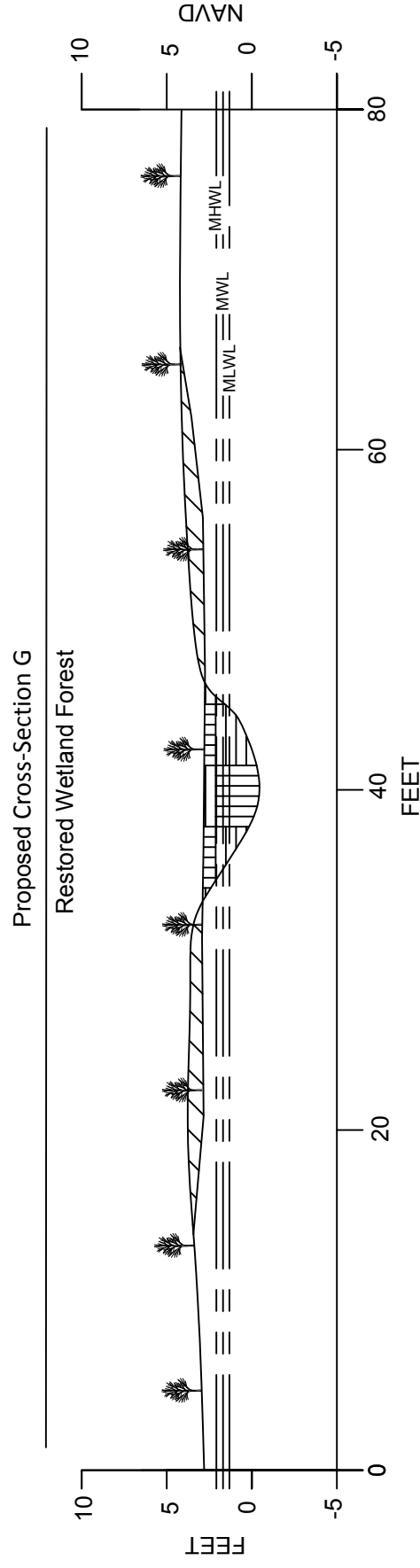
Figure C7

G




G'

G



G'

Excavation



Earthen Fill



MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:
 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
 2) All elevations are based on GEOID 12A.

Upper Barataria Coastal Mitigation Bank

CROSS-SECTION G-G'
 Assumption Parish, Louisiana

Created:	TSC/AutoCAD
Approved:	DB
Date:	6/3/2019
Dwg. No.:	Xsection

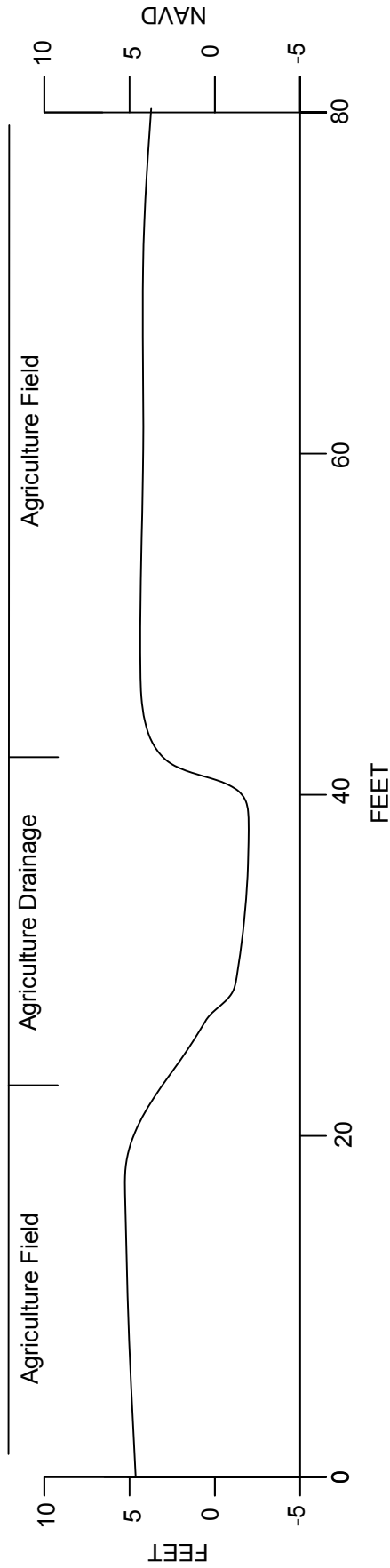


Figure C8

H

H'

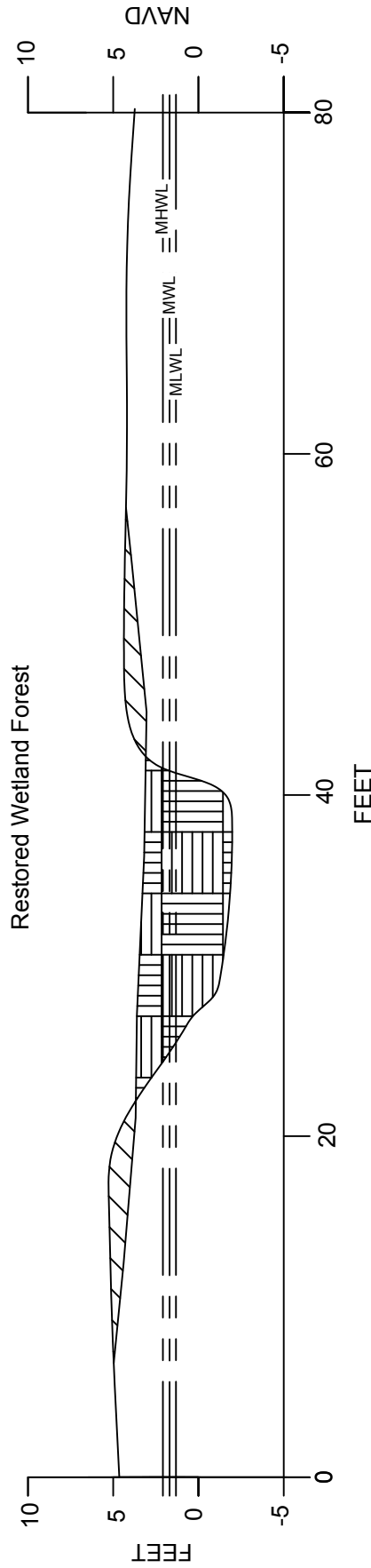
Existing Cross-Section H



H

H'

Existing Cross-Section H



Excavation



Earthen Fill



MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:

- 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
- 2) All elevations are based on GEOID 12A.

Upper Barataria Coastal
 Mitigation Bank

CROSS-SECTION H-H'

Assumption Parish, Louisiana

Created: TSC/AutoCAD

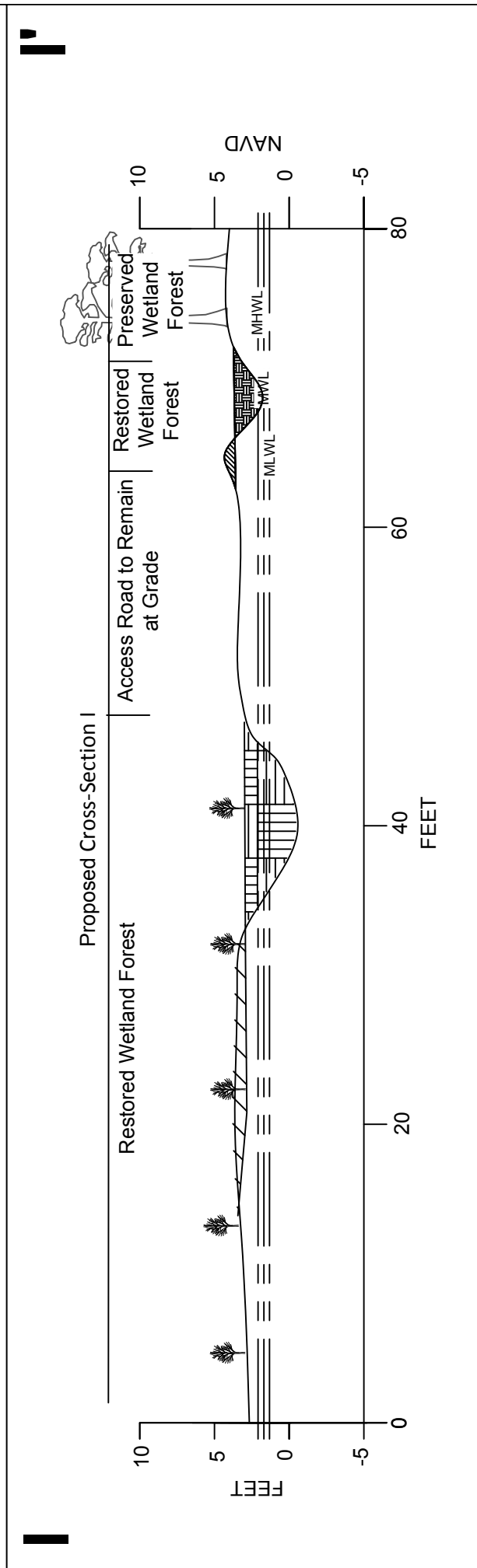
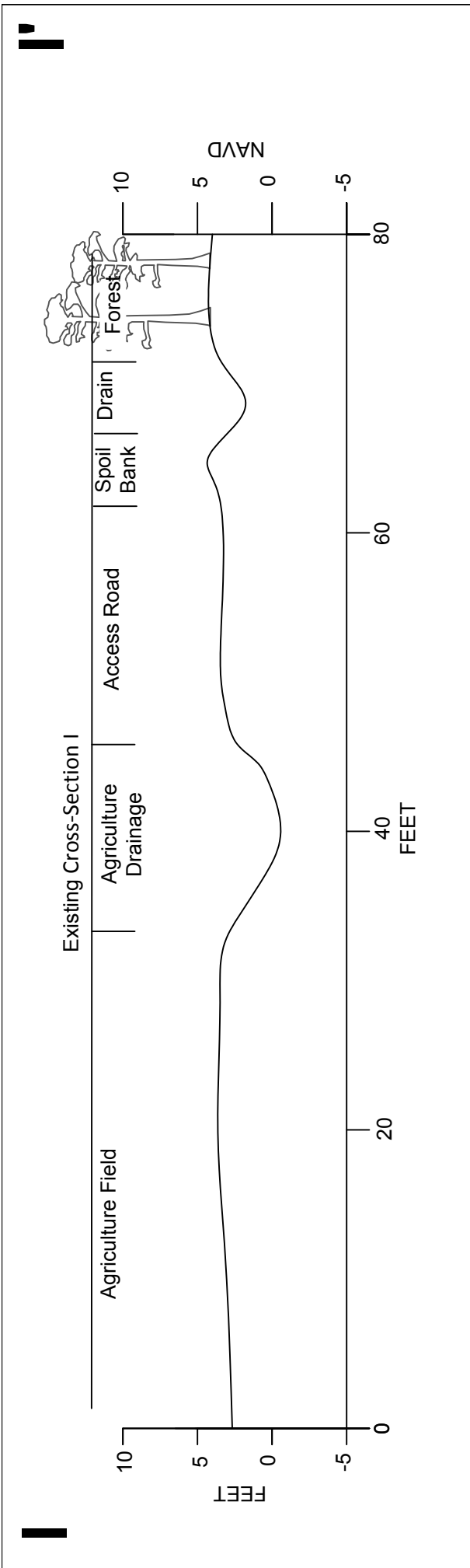
Approved: DB

Date: 6/3/2019

Dwg. No.: Xsection



Figure C9



Upper Barataria Coastal Mitigation Bank

CROSS-SECTION I-I'

Assumption Parish, Louisiana

Created:	TSC/AutoCAD
Approved:	DB
Date:	6/3/2019
Dwg. No.:	Xsection

Excavation

Earthen Fill

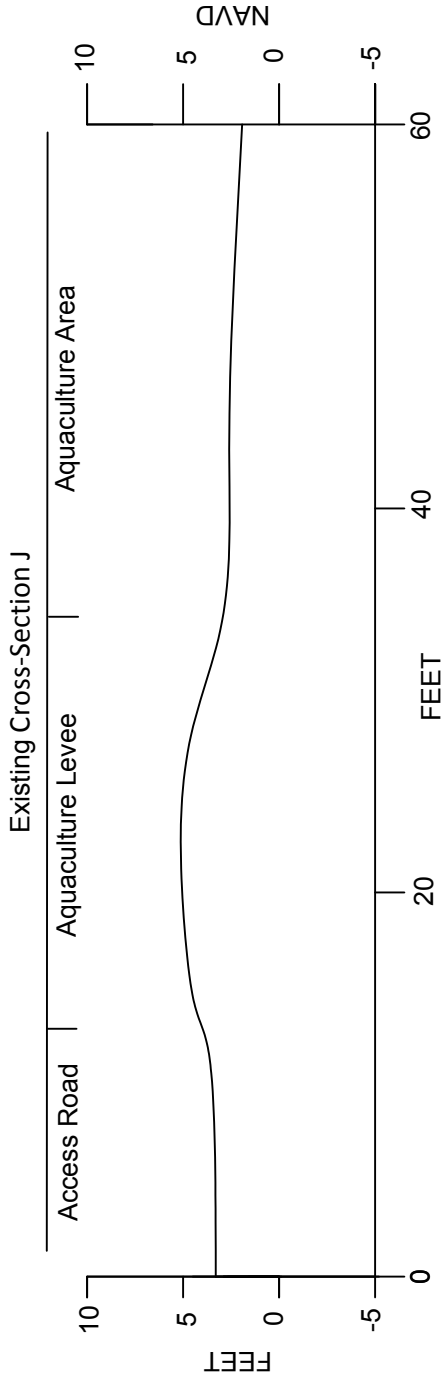
MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:
 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
 2) All elevations are based on GEOID 12A.

Figure C10

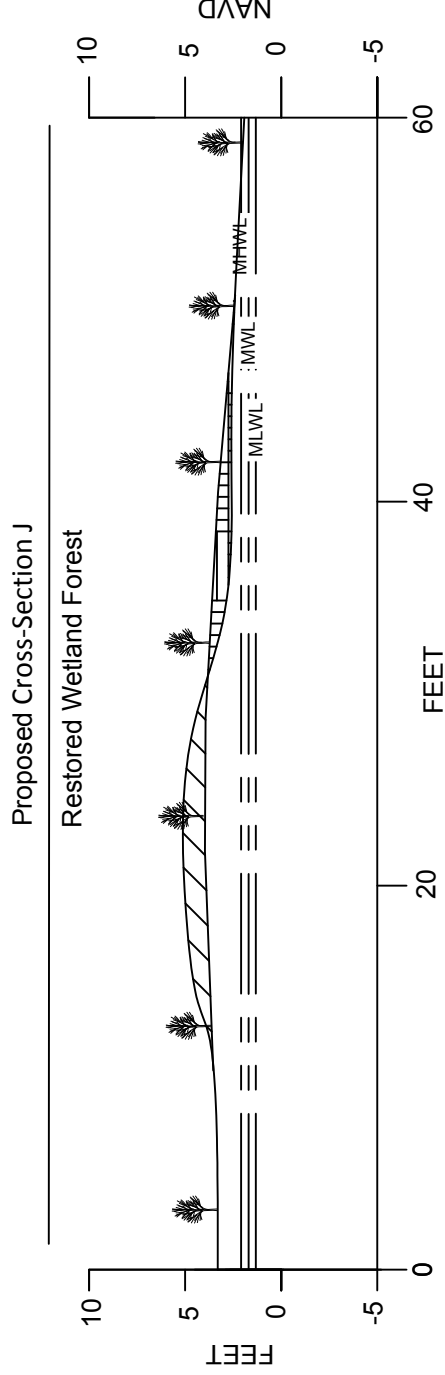
J

J'

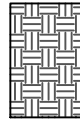


J

J'



Excavation



Earthen Fill

MHWL = MEAN HIGH WATER LEVEL IS 2.085 FEET
 MWL = MEAN WATER LEVEL IS 1.695 FEET
 MLWL = MEAN LOW WATER LEVEL IS 1.32 FEET

Notes:
 1) The water levels are averages from the Coastwide Reference Monitoring System (CRMS) stations 0197 and 0200 and based on daily records from October 2013 to March 2019.
 2) All elevations are based on GEOID 12A.

Upper Barataria Coastal Mitigation Bank

CROSS-SECTION J-J'

Assumption Parish, Louisiana

Created: TSC/AutoCAD

Approved: DB

Date: 6/3/2019

Dwg. No.: Xsection



Figure C11

Attachment D

**Preliminary Louisiana Rapid Assessment Method (LRAM)
Calculations**

LOUISIANA WETLAND RAPID ASSESSMENT METHOD (LRAM) 2.0

CEMVN Acct #	MVN-2019-00034	Bank Name	
Acres Mitigation	242.7	Upper Barataria Coastal MB	
Watershed Basin	Barataria		

		Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Mitigation Factors	Mitigation Type	Re-Est	Preser	Re-Est	Preser	Re-Est	Rehab	Preser	Pick Here
		6.0	0.4	6.0	0.4	6.0	5.0	0.4	0.0
	Management	None	Pick Here	None	Pick Here	None	None	Pick Here	Pick Here
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Negative Influences	Low	Pick Here	Low	Pick Here	Low	None	Pick Here	Pick Here
		-0.5	0.0	-0.5	0.0	-0.5	0.0	0.0	0.0
	Size	500 : 100	Pick Here	Less than 100	Pick Here	Less than 100	Less than 100	Pick Here	Pick Here
		0.0	0.0	-0.5	0.0	-0.5	-0.5	0.0	0.0
	Buffer / Upland	Pick Here	Pick Here	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
	Sum:	5.5	0.4	5.0	0.4	5.0	4.5	0.4	0.0
	Area:	99.1	2.0	31.2	10.7	27.4	4.1	68.2	
	Sum x Area Affected:	545.1	0.8	156.0	4.3	137.0	18.5	27.3	0.0

Σ Mitigation: 888.9

Mitigation Potential: 3.7

COMMENTS

Mitigation Type	Three Assessment Areas (see accompanying figure). Assessment Area A is Areas 1&2; Assessment Area B is Areas 3&4; Assessment Area C is Areas 5,6 & 7.
Management	
Negative Influences	Total project area contains two utility ROWs but do not traverse the three separate assessment areas (A, B, C). Spoil bank on north side of A1,A3&A5 but <12% of the boundary; A6 not bound by levees/spoil so no negative influence.
Size	Conservation servitude area is 261.0 acres. However, the size criteria for the Areas, with the exception of preservation areas, account for the size of each Assessment Area. Area A is 101.1 acres, Area B is 41.9 acres and Area B is 99.7 acres.
Buffer/Upland	

LRAM Assesment Areas



Legend

- Total Project Area (261.0 ac)
- Re-establishment - Area 1 (99.1 ac)
- Re-establishment - Area 2 (31.2 ac)
- Re-establishment - Area 3 (27.4 ac)
- Rehabilitation- Area 3 (4.1 ac)
- Preservation - Area 1 (2.0 ac)
- Preservation - Area 2 (10.7 ac)
- Preservation - Area 3 (68.2 ac)
- Rights-of-Way (14.0 ac)
- Access Trail - Area 1 (1.2 ac)
- Access Trail - Area 2 (0.5 ac)
- Access Trail- Area 3 (2.6 ac)



Attachment E

Site Photographs



Typical view of existing sugarcane field at the proposed Upper Barataria Coastal Mitigation Bank in Assumption Parish, Louisiana (December 17, 2018).



Typical view of recently harvested sugarcane field at the proposed Upper Barataria Coastal Mitigation Bank in Assumption Parish, Louisiana (December 17, 2018).



Typical view of agricultural drain to be filled at the proposed Upper Barataria Coastal Mitigation Bank in Assumption Parish, Louisiana (December 17, 2018).



Typical view of existing wetland forest at the proposed Upper Barataria Coastal Mitigation Bank in Assumption Parish, Louisiana (December 17, 2018).