



ST. TAMMANY PARISH

PATRICIA P. BRISTER
PARISH PRESIDENT

June 24, 2019

Please find the following addendum to the below mentioned RFQ.

Addendum No.: 1

RFQ#: 19-06-4/19-06-1

Project Name: Cane Bayou Mitigation Bank Management Services

RFQ Due Date: Thursday, June 27, 2019

GENERAL INFORMATION:

1. RFQ # 19-06-4 or RFQ#19-06-1 will be accepted for this project.

End of Addendum # 1

MITIGATION BANKING INSTRUMENT

CANE BAYOU MITIGATION BANK



MVN 2009-02402

Longleaf Pine Wetlands Rehabilitation Project St. Tammany Parish, Louisiana

Sponsor: St. Tammany Parish Government
P. O. Box 628
Covington, LA 70434

Agent: Biological Surveys Inc.
P O Box 94
Covington, LA 70433

Consultant: The Nature Conservancy
P O Box 1657
Abita Springs, LA 70420

June 2018

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MITIGATION BANKING INSTRUMENT

CANE BAYOU MITIGATION BANK

This Mitigation Banking Instrument (MBI) establishing the Cane Bayou Mitigation Bank (Bank or CBMB) Mitigation Bank (Bank) is made and entered into by and among Louisiana Parish of St. Tammany (Sponsor), and the Interagency Review Team (IRT) composed of the U.S. Army Corps of Engineers New Orleans District (CEMVN), Region VI of the U.S. Environmental Protection Agency (EPA), and the Louisiana Department of Wildlife and Fisheries (LDWF). This MBI is a binding agreement among the parties and incorporates the detailed Mitigation Work Plan (MWP) and any other specified attachments to this MBI as a part hereof.

I. PURPOSE OF MBI

This MBI sets forth guidelines and responsibilities for the establishment, use, operation, protection, monitoring and maintenance of the Bank to assure the proposed work associated with the Bank produces the necessary mitigation credits to compensate for unavoidable impacts to waters of the United States, including wetlands, that result from activities authorized by the Department of the Army (DA) pursuant to Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act (through DA permits), provided such activities have met all applicable requirements and are authorized by the appropriate regulatory agencies pursuant to 33 CFR 332.1 et seq. The Bank may also be used to satisfy the environmental requirements of other programs in accordance with the requirements and limitations of 33 CFR 332.3 and Section XI in this MBI and as such these environmental requirements are also subject to the requirements set forth in this MBI.

II. LOCATION AND OWNERSHIP OF BANK PROPERTY (PROPERTY)

A. Property Location

The CBMB is located between Mandeville and Lacombe, Louisiana in St. Tammany Parish (Attachment MBI - A - Figure 1). The 1165.5 acre Bank is found in all or portions of Sections 37, 42, and 43, Township 8 South, Range 12 East as shown on the United States Geological Survey 7.5 minute quadrangle maps Mandeville, LA and Lacombe, LA (Attachment MBI - A - Figure 2). CBMB lies just north of US Highway 190 and occurs in two parcels. Coordinates for the approximate center of the property are 30.349497 N and 90.007864 W. The western parcel is comprised of degraded wet pine savanna, upland pine flatwoods, and cypress-tupelo swamp as shown on a recent aerial photograph (Attachment MBI A - Figure 3). The eastern parcel is comprised of degraded wet pine savanna and loblolly pine-hardwood uplands.

Driving directions to CBMB are as follows: From North Causeway Blvd. in Mandeville, LA, exit right on the US 190/Monroe St. exit. At the intersection stay straight and get on East Causeway Approach for 1.3 miles. Turn right on US Hwy 190 and go for 3.7 miles. Turn left on Pelican Drive to reach the center of the property.

B. Property Ownership

The property owner is St. Tammany Parish Government, a not for profit government agency (Owner), who/which has owned the property for approximately four years. The west parcel is leased to and is part of the Northlake Nature Center (NNC), a 501c3 non-profit conservation group (weblink: [http:// northlakenature.com/](http://northlakenature.com/)) whose uses and goals for the property match that of the CBMB.

C. Property Legal Definition

A certain parcel of land, together with all buildings and improvements thereon, and all of the rights, ways, privileges, servitudes, prescriptions, advantages and appurtenances thereunto belonging, or in anywise appertaining, situated as stated above and more fully described in Attachment MBI - B :

The perimeter of the Property is defined by the following coordinates in decimal degrees:

Section 1:				
West Parcel				
1	30.368976	N and	90.017742	W
2	30.366025	N and	90.016212	W
3	30.359608	N and	90.023784	W
4	30.358691	N and	90.025228	W
5	30.358913	N and	90.025913	W
6	30.358778	N and	90.026740	W
7	30.359308	N and	90.027284	W
8	30.359504	N and	90.027804	W
9	30.359343	N and	90.028302	W
10	30.358652	N and	90.028503	W
11	30.358172	N and	90.030629	W
12	30.357233	N and	90.032265	W
13	30.357046	N and	90.032653	W
14	30.355399	N and	90.032692	W
15	30.35589	N and	90.034044	W
16	30.357223	N and	90.033669	W
17	30.357882	N and	90.032697	W
18	30.35824	N and	90.032693	W

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19	30.358945	N and	90.031610	W
20	30.358823	N and	90.031336	W
21	30.359153	N and	90.030836	W
22	30.359845	N and	90.030827	W
23	30.360038	N and	90.031018	W
24	30.360727	N and	90.030733	W
25	30.361387	N and	90.029871	W
26	30.361868	N and	90.030223	W
27	30.362056	N and	90.029945	W
28	30.36195	N and	90.028881	W
29	30.362397	N and	90.028261	W
30	30.363014	N and	90.027923	W
31	30.363032	N and	90.027262	W
32	30.36414	N and	90.025871	W
33	30.368211	N and	90.022322	W
34	30.36804	N and	90.019599	W

Section 1: East Parcel

1	30.35779	N and	90.016708	W
2	30.360532	N and	90.013451	W
3	30.349988	N and	90.008131	W
4	30.351005	N and	90.006753	W
5	30.348986	N and	90.007286	W
6	30.351134	N and	90.004417	W
7	30.35206	N and	90.005329	W
8	30.358158	N and	89.997147	W
9	30.356748	N and	89.995903	W
10	30.351444	N and	89.992605	W
11	30.348018	N and	89.992198	W
12	30.343357	N and	89.998477	W
13	30.343929	N and	90.000253	W
14	30.343453	N and	90.000391	W
15	30.342946	N and	90.001279	W
16	30.342526	N and	90.001306	W
17	30.343497	N and	90.00475	W
18	30.343897	N and	90.004679	W
19	30.344291	N and	90.005906	W
20	30.345053	N and	90.005698	W
21	30.34551	N and	90.007453	W

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22	30.347324	N and	90.007495	W
23	30.349374	N and	90.011981	W
Section 2				
1	30.358158	N and	89.997147	W
2	30.366814	N and	89.997147	W
3	30.358857	N and	89.980481	W
4	30.348018	N and	89.997147	W
5	30.351444	N and	89.997147	W
6	30.356748	N and	89.997147	W

D. Recorded Liens, Encumbrances, Easements, Servitudes or Restrictions

Good and merchantable title to the Property has been documented by a title report/opinion (Attachment MBI - B) generated by Select Title, LLC, in Madisonville, Louisiana which was **updated two weeks prior to execution of the conservation servitude**. Any exceptions to the real estate title not subordinated to the conservation servitude are listed below:

ENCUMBRANCES

THE ABSTRACT EXAMINED IN 2015 (AS UP-DATED IN 2017) REFLECTED INSCRIPTIONS AGAINST THE PARISH OF ST. TAMMANY, TO WIT:

OPEN JUDGMENTS:

M.IN. # 1527255 – Judgment in 22nd J.D.C. # 2003-15625 in favor of Howell Carter, III, dated December 13, 2005, in the amount of \$20,000.00, etc. Reinscribed December 9, 2015, M.IN. # 2005679.

M.IN. # 1681226 – Judgment in 22nd J.D.C. # 2000-15539 in favor of Andrew B. Daray, et al, dated May 3, 2008, in the amount of \$50,510.00 and \$10,000.00, etc.

M.IN. # 1763411 – Judgment in 22nd J.D.C. # 2000-15539 in favor of Andrew B. Daray, et al, dated April 5, 2010, in the amount of \$42,510.00, etc.

EXCEPTIONS TO TITLE

In regards to the exceptions and servitudes that may be applicable, the survey of Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, contains the following disclaimer:

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"The servitudes/right-of-ways shown hereon are at their approximate location as some deeds were not accurately plottable"

Exceptions to Title Shown on Title Policy:

The Parish of St. Tammany is the insured under a policy of owner's title insurance issued by WFG NATIONAL TITLE INSURANCE COMPANY under Policy No. 3155422-00634441 dated June 18, 2012, issued by Breaux Title Company, L.L.C., on which the following exceptions from coverage were specifically noted. The survey by Kelly J. McHugh & Assoc., Inc., dated June 11, 2012, Map File #5068, and the survey by Kelly J. McHugh & Assoc., Inc. dated January 23, 2017, also contained notes on the exceptions by the surveyor which are shown hereinafter (with the surveyor's notations of applicability shown in bold). The examiner has omitted any exception noted by the surveyor as inapplicable. ,

The Exceptions are as follows, to wit:

Right of Way in favor of United Gas Pipe Line Company, recorded in the official records of St. Tammany Parish, Louisiana, on August 7, 1941, as COB 152, page 61. (Exception does affect subject property and is referenced on survey as access to gas line where it is located but is not plottable in width or length).

Ownership the Louisiana Department of Conservation, or successor entity, of all improvements, buildings and their contents, equipment and building materials stored on the property transferred pursuant to and as set forth in the Act of Donation recorded in the official records of St. Tammany Parish, Louisiana, on September 8, 1943, as COB 160, page 164. (Exception does affect subject property and is not plottable)

Restriction regarding the removal of timber as set forth in the act recorded in the official records of St. Tammany Parish, Louisiana, on January 7, 1948, as COB 181, page 405. (Exception does affect subject property and is not plottable)

Restrictions regarding loitering set forth in the act recorded in the official records of St. Tammany Parish, Louisiana, on January 10, 1948, as COB 181, page 420. (Exception does affect subject property and is not plottable)

Right of Way in favor of Central Louisiana Electric Company, Inc., recorded in the official records of St. Tammany Parish, Louisiana, on December 31, 1956, as COB 248, page 510. (Exception does affect subject property and is not plottable)

Right of Way in favor of Central Louisiana Electric Company, Inc., recorded in the official records of St. Tammany Parish, Louisiana, on November 12, 1957, as COB 257, page 557. (Exception does affect subject property and is not plottable)

Reservation of minerals and terms and conditions set forth in the Right of Way Agreement in favor of the St. Tammany Parish, recorded in the official records of St. Tammany

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Parish, Louisiana, on September 24, 1980, as COB 988, page 297, Instrument No. 449292, Map File # 3222. (Exception does affect subject property and is plottable)

Right of Way in favor of Koch Pipeline Southeast, Inc., dated October 20, 1998, and recorded in the official records of St. Tammany Parish, Louisiana, as Instrument No. 1123131. (Exception does affect subject property and is plotted on the survey)

Lease in favor of the Northlake Nature Center, dated October 12, 1999, and recorded in the official records of St. Tammany Parish, Louisiana, as Instrument No. 1175171. (Exception does affect subject property and is plottable)

Right of Way in favor Cleco Power LLC, recorded in the official records of St. Tammany Parish, Louisiana, on November 3, 2004, as Instrument No. 1462190. (Exception does affect subject property and is plotted as shown on the survey)

Terms and conditions set forth in the Right of Way Agreement in favor of St. Tammany Parish, recorded in the official records of St. Tammany Parish, Louisiana on March 1, 2005, as Instrument No. 1480013. (Exception does affect subject property and is plotted as shown on the survey)

Reservation of minerals set forth in the Cash Sale of the property from the State of Louisiana and Department of Health and Hospitals to the Parish of St. Tammany, recorded in the official records of St. Tammany Parish, Louisiana, as Instrument No. 1861096.

Any loss due to any portion of the property being wetland; and all matters set forth on the plat of survey by Kelly J. McHugh & Assoc., Inc., dated June 12, 2012, Map File # 5068, and the survey of the Parcels 1 and 2 by Kelly J. McHugh & Assoc., Inc., dated January 23, 2017.

Pipeline servitude granted by the Parish of St. Tammany to Parkway Pipeline LLC dated May 14, 2013, registered in C.IN. # 1900589, Parish of St. Tammany. (Exception does affect subject property and is plotted on the survey).

Miscellaneous Exceptions to Title

This opinion does not guarantee any question arising with reference to Bayou Castine or Cane Bayou along the boundaries of the properties, nor does it guarantee the title to any portion of the properties lying in the bed of Bayou Castine or Cane Bayou nor against the rights of others to the use thereof.

The rights of others to use so much of the insured property as is comprised of portions of street, roads, alleys or rights-of-way on or across the subject property.

The rights of parties in possession and to any unrecorded rental agreements or leases.

III. RESPONSIBILITIES OF PARTIES

A. *The Owner*

1. The Owner shall furnish satisfactory evidence of clear title prior to the execution of this MBI unless such evidence of clear title was previously provided by a former owner of the site pursuant to this MBI.
2. The Owner shall grant a perpetual conservation servitude over the Property in accordance with the Louisiana Conservation Servitude Act La. R.S. 9:1271 et seq., and 33 C.F.R. § 332.8(t). Upon execution of the conservation servitude, the Owner shall record it with an attached copy of this MBI in the conveyance records of St. Tammany Parish, unless such conservation servitude was previously executed and properly recorded by a former owner pursuant to this MBI. Proof of such recordation will be provided to the IRT within 15 days of filing. Mitigation credits will not be released until proof of recordation is received.
3. The Owner shall not allow any Prohibited Uses (as hereinafter defined) of the Property as set forth in this MBI and the conservation servitude.
4. To help ensure the long-term protection, operation and management of the Bank, the Property is to remain free and clear of all mortgages and encumbrances, except those identified in Section II. D. above. The owner shall not identify the Property as collateral for any loan or other encumbrance not listed above placed on or discovered to burden the Property, the Owner shall take all actions necessary to clear such encumbrance, including bringing any legal action necessary to resolve the underlying debt or dispute and to clear the exception from the Property title. If an encumbrance other than those listed above is placed on or is discovered to burden the Property, the Owner shall notify CEMVN of such encumbrance within fifteen (15) days of discovery. In the notification the Owner shall specify a plan to clear the encumbrance from the Property title.
5. The Owner shall grant the Sponsor access to the Property. Any limitations on such access are to be a matter of contract between the Owner and the Sponsor. The Owner will also allow access to the Property to IRT members and the Holder of the conservation servitude (Holder) in accordance with this MBI.
6. The Owner shall make periodic inspections of the Property of not less than once per year to verify that use of the Property is consistent with this MBI and the conservation servitude and to inspect for any damage caused by flood, fire, storm, wind, accident, vandalism, negligence or other act or event that causes damage to the Bank.
7. In the event the Owner discovers a prohibited use or any damage to the Property, it shall notify the IRT and Sponsor within 15 days of its discovery of such use or damage.

8. The Owner shall notify the Sponsor and the IRT of any proposed transfer of the Property in accordance with the provisions of this MBI.

B. The Sponsor

1. Through contractual agreement with individual permit recipients, the Sponsor agrees to provide compensation to offset wetland impacts as required in DA Permits for which St. Tammany Parish Government or other government entities within the parish is the permit applicant. Sponsor commits to enhancing and restoring wetland functions and maintaining wetland habitats in accordance with 33 CFR Part 332 and the provisions of this MBI.

2. The Sponsor agrees to assume the legal responsibility for compensatory mitigation requirements of each DA permit for which it transfers credits once the permittee has secured the appropriate number and type of credits from the Sponsor. For each credit sale the Sponsor shall provide to CEMVN a signed declaration (MBI reference XI.E. and Attachment D) that the Sponsor has accepted the responsibility for providing the required compensatory mitigation required by the DA Permits. The declaration shall specify the permit number and the type(s) and amount(s) of credits sold. If the sponsor fails to provide a permit's required compensatory mitigation and/or if habitat represented by credits sold to a permittee fails to meet its success criteria and CEMVN determines that the Sponsor has failed to meet the requirements of this MBI with respect to such habitat, CEMVN may pursue enforcement measures against the Sponsor for non-compliance of the mitigation requirements of the corresponding DA permits.

3. The Sponsor agrees to perform all necessary work to establish, monitor and maintain aquatic habitats and buffers as described in the MWP (Attachment MBI – C)).

4. The Sponsor shall maintain accounting records, notify the CEMVN of credit sales, monitor the Bank for success, conduct remedial action as necessary to achieve success criteria, and provide this information to CEMVN in reports documenting Bank usage and the results of monitoring in accordance with 33 CFR Part 332 and the provisions of this MBI.

5. The Sponsor shall advise the IRT of any pending sale of the Bank or change in sponsorship at least 60 days prior to the effective date.

6. Prior to release of credits the Sponsor shall obtain all environmental documentation, permits, approvals and authorizations necessary to establish, operate and maintain the Bank. Approval of this MBI does not fulfill this requirement, or substitute, for such authorization.

7. Unless any of the responsibilities identified above are transferred, with prior approval of CEMVN, to a long-term steward. The Sponsor shall at all times remain responsible for: 1) the compensatory mitigation requirements for any DA permits for which it used

or sold Bank credits; and 2) the long-term management, maintenance, monitoring and protection of the habitat represented by those credits as set forth in the MBI and the MWP.

C. The IRT

CEMVN will serve as the chair of the IRT. For the Federal and State agency members of the IRT, participation in the review and oversight of this Bank is voluntary and subject to existing parameters of agency authority, agency regulations and agency funding. Concurrence with this MBI does not create any affirmative obligation to perform any specific action with respect to this Bank. Subject to the availability of staff and funds, the agencies represented on the IRT agree to:

1. Provide appropriate oversight in carrying out provisions of this MBI.
2. Provide comments on all project plans, proposed additions to land to the Bank, annual monitoring reports, credit review reports, contingency plans, and necessary permits for the Bank.
3. Review and confirm reports on evaluation of success criteria prior to approving credits or releasing escrow account funds.
4. Conduct compliance inspections as needed and recommend corrective measures (if any) to the Sponsor, until the terms and conditions of the MBI have been determined to be fully satisfied or until all credits have been used/sold, whichever is later.
5. Review, comment, and approve/disallow any modifications to this MBI.

D. The Holder of Conservation Servitude (Holder)

1. The Holder agrees to hold and enforce the conservation servitude placed on those lands within the Bank subject to recorded perpetual conservation servitude.
2. The Holder shall notify CEMVN within three business days of the discovery of prohibited use on the Property or any action taken to void or modify the conservation servitude. The Holder shall take all reasonable and prudent steps to cure and/or to clear any identified prohibited uses.
3. The Holder shall perform yearly inspections and provide annual reports as to compliance with the terms of the conservation servitude, the existence of any prohibited use on the Property, and the actions to enforce the terms of the Conservation Servitude.
4. The Holder may be the recipient of the financial assurance should the Sponsor be in default of this MBI and shall utilize such funds as directed by the IRT.

5. The Holder may serve as the Long-Term Steward should the Sponsor make arrangements for the Holder to act in this capacity.

E. Long-Term Steward (Steward)

Appointment of a long-term Steward is subject to the review and approval of CEMVN. If a long-term Steward is appointed, the Steward will assume the responsibilities of the Sponsor and will perform the long-term maintenance, management, monitoring and reporting responsibilities in accordance with this MBI.

IV. GOALS AND OBJECTIVES

The Bank will provide Section 1: 394.7 acres of wet pine flatwood savanna (enhancement), 112.0 acres of buffer (15.0 acres cypress-tupelo/scrub-shrub swamp and 97.0 acres loblolly pine-hardwood forest/pine flatwood uplands) and 190.6 acres of non-wetland inclusions. Section 2 will provide 290.2 acres of wet pine flatwood/savanna enhancement, 143.7 acres of buffer (loblolly pine-hardwood forest/pine flatwood uplands), and 21.4 acres of non-wet inclusions.

The primary goal of the entire proposed CBMB project is restoration of 684.9 acres of degraded and highly altered wet pine flatwoods/ savanna (hereinafter pine savanna) plus associated wetlands, and 255.7 acres of buffer. A total of 212 acres of non-mitigation inclusions (non-wet pine flatwoods and mixed hardwood - loblolly forest, and wet cypress-tupelo/scrub-shrub swamp and waters of the U.S.) will be preserved and/or restored as funding allows in non-mitigation areas within the bank boundary.

Goals and objectives as well as contributions to overall watershed/regional functions provided by the Bank are further described in the MWP (**Attachment MBI - C**) with specific details provided for Section 1.

The Work needed for the Section 1 will start within one month of signing the MBI and shall be completed within an estimated twelve months of starting said work depending on weather conditions.

Initial construction work for Section 2 is planned to start approximately one year after construction work for Section 1 is completed pending review and approval of appropriate documents by CEMVN in conjunction with the IRT. It will be necessary to submit an appropriate Mitigation Banking Instrument Work Plan for Section 2 as well as financial documentation (for both Construction and Establishment Accounts and Long Term Financial Accounts) for Section 2. This information will be subject for review and approval by CEMVN in conjunction with the IRT before any credits can be considered for release in relation to the Section 2 portion of CBMB as shown on the drawings in this MBI and WP.

V. PERFORMANCE STANDARDS

Authorization to sell credits to satisfy compensatory mitigation requirements in DA Permits is contingent on compliance with all of the terms of this instrument, including construction and operating the Bank in accordance with the MWP, adhering to the requirements of the Conservation Servitude and maintaining sufficient financial assurances.

If, at any time, CEMVN determines that Sponsor is not in compliance with the terms of this instrument, credit sales may be suspended. If after consultation with Sponsor and the IRT, CEMVN determines that corrective action may remedy the deficiency, the Sponsor will be given the opportunity to bring the Bank into compliance with the terms of this instrument. If after consultation, CEMVN determines either that corrective action will not be effective to cure the deficiencies or that the Sponsor's efforts at further corrective action will not be sufficient to correct the deficiencies within a reasonable time, CEMVN in its sole discretion may terminate all credit sales.

Potential "corrective actions" include but are not limited to: modification or termination of the MBI, suspending credit sales, adaptive management, revisions to the credit release schedule, decreasing available credits, increasing the amounts of financial assurances, utilizing existing financial assurances, and/or providing alternative compensatory mitigation to satisfy any credits that have already been sold through the purchase of mitigation credits at another CEMVN approved mitigation bank. Determination of the appropriate corrective action for any particular deficiency lies solely within the discretion of the CEMVN, who will consult with the IRT and Sponsor before making the determination.

In order for the Bank to be considered acceptable for mitigating wetland impacts associated with DA permits, the Property will be restored in accordance with the MWP such that it meets wetland criteria as described in the 1987 Corps of Engineers Wetland Delineation Manual (the 1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). Performance standards used to measure the success of the Bank are provided in the MWP (Attachment MBI - C).

VI. MONITORING PLAN AND REPORTING PROTOCOLS

A. Monitoring

The Sponsor agrees to perform all work necessary to monitor the Bank to demonstrate compliance with the success criteria established in this MBI. Monitoring guidelines are established in the MWP.

B. Reporting Protocols

The Sponsor agrees to provide all monitoring reports as described in the MWP.

VII. CONTINGENCIES AND REMEDIAL ACTIONS

A. Adaptive Management

In the event the CEMVN, in consultation with the IRT, determines adaptive management is needed, the Sponsor agrees to implement an approved Adaptive Management Plan in accordance with 33 CFR 332.4(c)(12) and 33 CFR 332.7(c) and Section XII of the MWP.

B. Notice of Deficiency

1. . If monitoring discloses that the Bank does not meet success criteria, the Sponsor shall provide a Notice of Deficiency to CEMVN that such success criteria have not been met. This notice shall be submitted with the monitoring report. Along with the notice the Sponsor shall provide a detailed explanation of the deficiency and propose specific measures and a timetable to correct the deficiency (ies). CEMVN, in consultation with the IRT, will determine the course of action required to correct deficiencies and will notify the Sponsor to engage in corrective actions pursuant to the Adaptive Management Plan or such other actions as CEMVN may deem necessary from time to time.

2. When a disaster (natural or man-induced) adversely affects the Bank, the Sponsor shall inspect the site and if necessary shall provide a Notice of Deficiency to CEMVN of such circumstance within two weeks of the event. The notice will identify the disaster and impacts to the Bank, specify measures to be taken to correct the impacts and a timetable to complete the work necessary to restore the Bank. CEMVN, in consultation with the IRT, shall review said information and determine if the disaster was beyond the control of the sponsor and if the damage is substantial. In circumstances where the disaster is determined to be beyond the control of the Sponsor and it is deemed to have caused substantial damage, the procedure outlined in Section VII.D. herein shall govern. In all other instances CEMVN will notify the Sponsor to engage in corrective actions pursuant to the Adaptive Management Plan or other action as the CEMVN, in consultation with the IRT, may warrant (See Paragraph VII.D. "Catastrophic Events", below).

C. Conditions for Suspending Credit Sales

All credit sales/use are contingent on meeting the standards and requirements of this instrument, adhering to the conservation servitude, and maintaining sufficient financial assurances.

1. Should the IRT determine that the Sponsor is in default of its obligations hereunder or the Bank is not performing in accordance with the standards and criteria set forth in this MBI, credit sales/use will be suspended. Sale/use of credits may not resume until such time as remedial action has been taken and the deficiencies have been cured to the satisfaction of CEMVN, in consultation with the IRT.
2. Sponsor's failure to complete implementation of any corrective action or remedial measure deemed necessary by CEMVN including any adaptive management to meet performance standards within one growing season (November 1 of the following year) following notification of deficiency will result in the revocation of any remaining mitigation credits. If at any time the CEMVN, in consultation with the IRT, determines that the Bank is operating at a deficit, the Sponsor at its full cost and expense shall make-up for the credit deficit by purchasing credits at a CEMVN approved mitigation bank. The perpetual conservation servitude will remain in place on the Property to protect the habitat/acreage represented by credits already sold.

D. Catastrophic Events including Natural Disasters and Unlawful Acts

In the event substantial damage to the Bank caused by a natural or human-caused disaster or a deliberate and unlawful act, and the CEMVN, in consultation with the Sponsor and the IRT, determines that prevention or mitigation of the disaster was beyond the control of the Sponsor, its agents, contractors, or consultants; the Sponsor may request, and CEMVN, in consultation with the IRT, may approve changes to the construction, operation, project milestones, performance standards or crediting formula of the Bank.

A natural catastrophic event includes, but is not limited to, a flood equal to or greater in magnitude than the 100-year flood event, earthquake, drought, debilitating disease, wildfire, depredation, regional pest infestation, or fluviomorphic change. A human-caused catastrophic event includes, but is not limited to, war, insurrection, riot, or other civil disorders, spill of hazardous or toxic substance, or fire. A deliberate and unlawful act includes, but is not limited to, the dumping of a hazardous or toxic substance as well as significant acts of vandalism or arson. If any such act occurs the IRT, in consultation with the Sponsor, will determine what changes to the Bank and/or this MBI will be in the best interest of the Bank and the aquatic environment.

In the event that such a disaster causes substantial damage to the Bank, sale of credits shall be immediately suspended pending determination by CEMVN, in consultation with the IRT, of:

1. The nature and extent of damage caused to the Bank and the measures necessary to remediate such impacts will determine:

- a. Whether sufficient surviving mitigation exists to accommodate credits already sold from the Bank; and,
- b. Whether conditions at the Property despite damage caused by the disaster are such that the sale of credits may resume.

2. The Sponsor shall implement adaptive management measures deemed necessary by CEMVN, in consultation with the IRT, to remediate identified impacts within one year of the event and shall implement any subsequent adaptive management measures deemed necessary by CEMVN, in consultation with the IRT, from time to time before the next growing season. Failure to comply with these provisions may result in the suspension of credit sales or revocation of credits as set forth in Section VII.C. Suspension of credit sales or revocation of credits does not relieve the Sponsor of its obligation to continue to operation, manage, and maintain the habitat/acreage represented by credits previously sold and to continue to monitor and report with respect to those areas.

E. Financial Responsibilities

In all instances the Sponsor shall bear the full cost and financial responsibility associated with the construction, operation, and management of the Bank and any and all corrective actions and remedial measures deemed necessary under the provision of this MBI. Although in appropriate instances financial assurances may provide a source of funds to remedy deficiencies and/or to provide for long-term management needs, the absence of sufficient financial assurances to correct deficiencies and/or to fund long-term management will not relieve Sponsor (or Long-term Steward) of its responsibilities pursuant to this MBI.

VIII. INSPECTION BY IRT AND HOLDER

The Sponsor and the Owner shall grant access to the Property to members of the IRT or their agents or designees, and the Holder for the purpose of inspection, compliance monitoring, adaptive management, corrective measures and remediation consistent with the terms and conditions of this MBI. Inspecting parties will give a three day minimum notice to the Sponsor and/or the Owner prior to any site visit except Holder shall have the right to enter the PROPERTY without prior advance notice to Sponsor or Owner where immediate entry is necessary or desirable to prevent, terminate, or mitigate damage to, or the destruction of, the Conservation Values, or to prevent, terminate or mitigate a violation of the terms of this Conservation Servitude

IX. FUNDING

A. Construction and Establishment (C&E) Funds

1. PURPOSE

The Sponsor agrees to provide Financial Assurances sufficient to ensure satisfactory completion of the work described in the MWP (Attachment MBI - C) and the Adaptive Management Plan (Section XII of the MWP). The Sponsor further agrees to establish a Construction and Establishment (C & E) financial assurance to ensure the availability of sufficient funds to perform work required to attain long-term success criteria.

2. ESTIMATE OF FUNDS REQUIRED

Section XIV of the MWP outlines the method of assessing initial construction costs and ongoing management funds required for a third party to construct or manage and monitor the lands through the first 10 to 15 years for pine flatwood savanna systems. Summaries of the construction costs, establishment costs, and itemization sheets will be provided as Attachment MWP - C of the MWP.

3. C & E FUNDING MECHANISM

The Sponsor is establishing the Construction and Establishment (C & E) financial assurance to assure sufficient funds are available to perform work required to construct and maintain the Bank through successful attainment of long term success criteria. An assessment of the initial and capital costs and ongoing management funds required to manage and monitor the Bank is included in the MWP and provides an estimate of work and cost requirements for construction and establishment of the Bank through achievement of long term success criteria. The funding information for this account is provided in section XIV (Funding) of the MWP.

Note: If a letter is not provided to CEMVN stating the account information confirming the deposit of escrow amounts including (as an attachment) a signed official copy of the funding resolution for the Construction and Establishment within 45-days after the signing of the MBI by CEMVN, then the MBI shall become invalid.

4. C & E FINANCIAL ASSURANCES:

a. The sponsor shall provide copies of annual status of the financial assurances to CEMVN upon request and/or in their monitoring reports.

b. The financial assurances shall guarantee payment to a third party, as determined appropriate by the CEMVN in consultation with the IRT, in the event that the Sponsor does not fulfill its obligations to perform, as specified in this MBI.

c. Payment to Sponsor, or if necessary, to a third party as identified by CEMVN, of a specified amount of the financial assurances shall be made upon written notification by CEMVN to the financial institution.

5. C & E RELEASE SCHEDULE (SECTION I ONLY)

The Financial assurances shall be reduced as success criteria are achieved and the probability decreases that those funds would be needed according to the schedule as shown in Section XIV, A, 3. "*C & E Release Schedule*". of the MWP.

B. Long Term Maintenance/Management Funds

To ensure long-term sustainability of the resource, the Sponsor will describe the Maintenance/Management Funds needed in Section XIV. of the MWP (Attachment MBI - C) of this MBI.

1. ANNUAL COST ESTIMATES FOR LONG-TERM NEEDS

The cost of long-term management for years 16 to 50 and adjusted for inflation every five years is discussed in the Section XIV of the MWP (Attachment MBI - C).

2. LONG-TERM MAINTENANCE AND PROTECTION FUNDING MECHANISM ¹

The Sponsor shall establish a Long-Term Maintenance and Protection Fund as discussed in Section XIV of the MWP. The long term maintenance and protection will primarily be funded by depositing funds into the Escrow Account when each credit acre is sold/used.

X. LONG-TERM PROTECTION AND MAINTENANCE

A. Conservation Servitude

The Owner shall burden the Property with perpetual conservation servitude in accordance with Louisiana Conservation Servitude Act, La. R.S. 9:1271. et seq. The conservation servitude shall be signed, notarized and filed in the St. Tammany Parish conveyance record with an executed copy of the MBI attached. After filing, a copy of the recorded conservation servitude, clearly showing the book, page and date of filing, will be provided to CEMVN prior to the release of credits.

¹ The deposit value per credit acre must reflect, at a minimum, the total fund value divided by no more than 90% of anticipated credits

Prior to execution of the conservation servitude, the Owner shall provide evidence that the entity proposed to hold the conservation servitude is a CEMVN approved Holder by virtue of being either a governmental body empowered to hold an interest in immovable property under the laws of the State of Louisiana or the United States of America; or is a non-profit corporation organized pursuant to Louisiana's Non-Profit Corporation Law, Title 12, Sections 201-269 of the Louisiana Revised Statutes, or is non-profit corporation qualified under Section 501(c) of the United States Internal Revenue Code, the purposes or powers of which include retaining or protecting the natural, scenic, or open-space values of immovable property; assuring the availability of immovable property for agricultural, forest, recreational or open-space use; protecting natural resources; maintaining or enhancing air or water quality; or preserving the historical, archaeological or cultural aspects of unimproved immovable property. Upon execution of the conservation servitude, the Holder shall hold and enforce the conservation servitude placed on the Property and the Property shall be protected in perpetuity.

Modification of the conservation servitude is not permissible without prior written authorization from CEMVN, in consultation with the IRT. Any request to modify the conservation servitude, or to the rights and obligations created under it, shall be made in writing and forwarded to CEMVN for review and approval. All requests must describe existing language and the requested modification. Notwithstanding, anything contained in this MBI or any documents attached hereto, no modification, amendment or termination of the Conservation Servitude, in whole or in part, shall be effective without the written approval of the Holder.

The Owner acknowledges and agrees that the conservation servitude applies to all of the Property, not just those portions of the Property identified as wetlands.

1. PROHIBITED USES.

No activities that result in the material degradation of habitat within the Bank (Prohibited Uses) shall be permitted without prior written authorization from CEMVN, following consultation with the IRT. Prohibited uses include but are not limited to:

- a. Construct any structure or structures on the Property;
- b. Cutting, burning, removing or destroying vegetation (including trees) on the Property except in accordance with CEMVN, in consultation with the IRT, approved plan for controlling invasive species or other management needs;
- c. Building or developing new roads, trails or paths on the Property except as authorized by CEMVN;
- d. Partitioning the Property with fencing or constructing perimeter or boundary fencing designed to impede the movement of terrestrial wildlife to and from the

Property from adjacent forested to other undeveloped property or designed to contain terrestrial wildlife within the property;

e. Changing the elevation of or contours (excavate or deposit dredged material) of the Property except in accordance with the MWP or under a CEMVN (in conjunction with the IRT) approved adaptive management plan;

f. Pumping, draining or allowing the Property to be drained in any way;

g. Placing, filling, storing, or dumping refuse, trash, vehicle bodies or parts, rubbish, debris, junk, waste, hazardous or toxic substances or other such items on the Property;

h. Land clearing or deposition of soil, shell, rock or other fill on the Property;

i. Grazing of animals including cattle or other domestic livestock on the Property or conduct any form of animal husbandry for any purpose on the Property

j. Commercial, industrial, agricultural, mineral exploration and extraction or residential uses of the Property without prior written authorization from CEMVN;

k. Operating of any vehicle (including, but not limited to, motorcycles, all-terrain vehicles, cars, trucks, farm vehicles) on the Property in a manner such that its use destroys/removes vegetation or alters the natural contours of the surface elevation except in accordance with the MWP or under a CEMVN approved adaptive management plan;

l. Dividing, partitioning, subdividing or conveying the Property except in its current configuration in its entirety;

m. Tilling or plowing or using the Property for the cultivation of row or other crops;

n. Ditching, diking, filling, excavating, removal of topsoil, sand, rock, gravel, or other materials;

o. Disrupting, altering, polluting, depleting or extracting on or from the Property of existing surface or subsurface water flow or natural water sources, fresh water lakes, ponds and pond shores, marshes, creeks, or any other water bodies;

p. Conducting activities on or using the Property in a way that may reasonably be expected to cause detriment to water purity or alter natural water levels and/or flow in or over the Property

q. Using pesticides or biocides, including but not limited to insecticides, fungicides, rodenticides and herbicides except that pesticides and biocides may be used as necessary to eliminate invasive non-native species and native trees and brush required

to restore native habitats and species on the Property, provided however, that pesticides and biocides may be used only in those amounts and with a frequency of application that constitute the minimum necessary for control and in compliance with all applicable government regulations and manufacturer recommendations

r. Disturbing the surface for the purpose of removing, developing, producing, or extracting of any minerals in or on the Property; and

s. Any other activity, which is inconsistent with the establishment, maintenance and protection of the Property as identified in the Mitigation Work Plan.

2. ALLOWED USES.

The Owner/Sponsor shall not use or authorize the use of areas within the Bank for any purpose that interferes with its conservation purposes other than those exclusively specified below:

a. Monitoring of vegetation, soils and water;

b. Maintenance of wetlands, pre-existing trails, bridges, berms, dams, outlet and spillway structures, firelines and other appurtenant facilities as identified in the MWP;

c. Licensed hunting, fishing, trapping and non-consumptive recreational uses (i.e., hiking bird watching, etc.);

d. Ecological education that does not involve alteration, destruction or injury to any vegetation, habitat, trees, ground areas, etc.;

e. Placement of a maximum of 60 small (less than 2 feet by 2 feet) metal or fire-resistant signs to indicate "mitigation bank", "no hunting," "no trespassing," or similar information on trees or fences along boundaries of the Property or along access roads and trails

f. Activities identified in Section VI (Description of Work to Be Performed) and Section VII. (Maintenance Plan) of the MWP necessary to implement and maintain the development of the Bank in accordance with this MBI; and

g. Any activity that has received authorization from CEMVN, in consultation with the IRT, through a DA permit.

The Owner and Sponsor understand that the construction, operation and abandonment of any authorized activity must be done in such a manner that minimizes direct, secondary and cumulative adverse impacts to the bank. At the termination of the authorized activity, the site will be restored to pre-project elevations and planted with a mixture of appropriate wetland species. The Owner and Sponsor acknowledge that

such activities have the potential to reduce the total amount of credits available in the bank and

h. GRANTOR reserves the right to explore, develop, produce, extract and transport oil and gas (together with such other liquid or gaseous hydrocarbons, sulphur, and substances as are necessarily produced through the wellbore with and incidental to the production of oil or gas) ("Oil and Gas Mineral Activities"); provided, however, no surface mineral extraction, seismic activity, or other oil and gas mineral activity affecting the surface of the Property will be allowed on the Property and Oil and Gas Mineral Activities may only be conducted with prior written authorization from CEMVN and in accordance with any restrictions in the Conservation Servitude.

B. The Long-term Maintenance Plan

The Long-Term Maintenance Plan is outlined in the MWP (Attachment MBI - C), to this MBI).

XI. BANK USE

Credits derived from the ecological benefits associated with implementation and maintenance of the Bank may be used as compensatory mitigation for unavoidable impacts to waters of the United States, including wetlands, that result from activities authorized under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act provided such activities have met all applicable requirements. Additionally, these credits derived may be used as compensation for wetland impacts outside the New Orleans District or for other programs provided approval from CEMVN is obtained first. In instances where credits are used for purposes other than compensation for DA permits, the determination of amount of acres necessary to satisfy those compensatory requirements will be made by the agency in charge of that respective program. Regardless of the program for which an ecological credit is used/sold that acreage is deducted from total acreage of the Bank and may not be used/sold again.

A. Bank Service Area

The Bank is located in the U.S.G.S. Hydrologic Cataloging Unit of 08090201 and is established to provide compensation for impacts to pine flatwoods/savanna wetlands in the Lake Pontchartrain Basin (which includes the following 8-digit hydrologic units: 08070202, 08070203, 08070204, 08070205, 08090201, 08090202, and 08090203) in St. Tammany Parish, which shall be the Primary Service Area (Attachment MBI - A - Figure 4). This includes U.S.G.S. Hydrologic Cataloging Unit codes (HUC) 08090201 and 08070205, the Liberty Bayou – Tchefuncta and Tangipahoa River drainage basins respectively. No secondary service area is proposed, as it would include areas outside St. Tammany Parish or CEMVN, and/or areas that do not support pine flatwoods/savanna wetlands

B. Projects Eligible to Use the Bank

Only after CEMVN has determined that the Bank is appropriate can the Bank be used to satisfy a permittee's mitigation responsibilities. Generally, the Bank will not be appropriate for adverse impacts occurring outside the primary Bank service area and/or impacts that are to other wetland types. However, CEMVN may consider use of the Bank on a case-by-case basis if, after consulting with the other regulatory and resource agencies, they determine that the Bank offers ecologically preferable compensation to that available within the impacted watershed. To compensate for out-of-kind impacts and/or impacts in other watersheds may increase the amount of required mitigation.

C. Determination of Bank Credits

To determine the amount of acres required to offset a particular impact to wetlands, CEMVN will use either best professional judgment or a CEMVN approved assessment method to determine the number of credits per acre available at the bank and the number of credits lost as a result of an impact. The same assessment method will be used to calculate both credits available and credits lost.

Credit Determination is tied to the ecological restoration and/or enhancement outlined in the MWP (Attachment MWP – C: Section XI).

D. Schedule of Credit Availability

Credit release is tied to achieving all the milestones within the success criteria at specific monitoring times as outlined in the MWP (Attachment MBI – C: Section VIII and XI).

E. Credit Transactions

1. STIPULATIONS REGARDING THE SALE OF CREDITS

a. By entering the transaction into the Regulatory In-lieu Fee & Bank Information Tracking System (RIBITS), the Sponsor acknowledges and agrees to assume legal responsibility for the permittee's compensatory mitigation requirements identified in a permittee's DA permit. Immediately following this entry, the Sponsor will provide signed documentation (MBI - Attachment MBI - D) that confirms that he has accepted the legal responsibility for providing the required compensatory mitigation. In so doing, the Sponsor acknowledges that he has agreed to accept the legal responsibility for the establishment, long-term management, maintenance, monitoring and protection of the restored wetlands represented by the transferred credits. If the Sponsor fails to provide the required compensatory mitigation, CEMVN may pursue enforcement measures against the Sponsor to ensure compliance with the mitigation requirements of the Department of the Army Permit (DA Permit).

b. For each credit transaction the Sponsor shall complete and sign the written declaration (Attachment MBI - D) that the Sponsor accepts the responsibility to provide the compensatory mitigation required by the permittee's DA Permit. The declaration is to include the DA Permit number and is to specify the number and resources type(s) of credits that the Sponsor has transferred. The Sponsor will forward the declaration to CEMVN the same date it enters the transaction information into RIBITS.

c. Prior to the sale of credits, the Sponsor shall contact the CEMVN project manager for DA Permit transactions to obtain approval to sell credits and to verify acreage requirements and necessary ledger information. Where a credit transaction is not related to a CEMVN DA Permit, the Sponsor must contact the CEMVN bank project manager for approval to sell those credits. Sale will generally be approved unless there is a DA Permit pending that proposes to use all or part of the requested credits. A credit transaction for a CEMVN DA Permit will take precedence over all other credit transactions. CEMVN will provide written confirmation of its decision.

d. The Sponsor shall not commit to providing mitigation that is not available or is committed for other projects. Should the number of credits debited/sold exceed the number available, the Sponsor, at its own cost and expense, shall secure credits from another CEMVN approved mitigation bank within the watershed in an amount to necessary to fully offset the credit shortage.

e. Credits will be used/sold in no less than tenth acre increments.

2. PROCEDURE FOR USING/SELLING BANK CREDITS

a. CEMVN, with input from interested resource agencies, will determine the number and types of mitigation credits that must be secured to fully compensate for a proposed project's wetland impacts when those impacts are associated with a DA Permit. The CEMVN project manager will provide the applicant with a list of CEMVN approved mitigation banks that are appropriate for offsetting the unavoidable adverse impacts associated with his proposed project. The amount of mitigation required is determined by the CEMVN project manager and will be rounded to the nearest one-tenth (0.1) acre.

b. If the permit applicant selects the Bank, the applicant will contact the Sponsor and arrange for the purchase of the necessary acres as determined by CEMVN. Prior to the sale of credits the Sponsor must obtain approval from CEMVN in accordance with the provisions of paragraph 1.a above.

3. CREDIT SALE NOTIFICATION

a. Upon contracting for the credit sales, the Sponsor shall enter the necessary information into the RIBITS. The information will include the Corps jurisdiction, date of transaction,

permittee name, credits debited, permit number, wetland type impacted, acres impacted, impact project's USGS 8-digit HUC, and impact latitude and longitude.

b. The acreage required by the DA Permit will be deducted from the Bank's credit balance at the time it is entered into RIBITS. Sale terms including price and payment are matters of contract between Sponsor and permittees. For any credit transaction once the credits are debited, the Sponsor is legally responsible for provision of the compensatory mitigation required by the DA Permit. Any failure by the permittee to comply with the terms of the sale will not affect either the credit debiting or Sponsor's responsibility to provide the mitigation required by the DA Permit.

F. Requirements for Initial Credit Release

No Credits will be released until the Sponsor has provide a signed statement stating that all of the following requirements have been met and has provided copies of the following executed documents, as appropriate:

1. Permits: Obtain all necessary permits (including DA Permits), approvals, and authorizations required to construct, operate, and maintain the Bank. This MBI does not fulfill or substitute for such authorization.

2. Holder Qualifications: Evidence that the entity proposed to hold the conservation servitude is a CEMVN approved Holder.

3. Conservation Servitude: An executed perpetual conservation servitude for the entire bank (Sections 1 and 2) with a copy of this MBI with proof of recordation in the Mortgage and Conveyances Records Office of the parish in which the Property is located. Proof of such recordation will be provided to the IRT within 15 days of filing.

4. Financial Assurance: Documentation for Section 1 (active section) establishing the C&E financial assurances stipulated in Section IX and the Long-Term Maintenance and Protection financial assurances described in Section X of this MBI and in Section XIV of the MWP plus Attachment MWP-C.

5. Property Ownership: A title search for the entire bank (Sections 1 and 2) that identifies all known encumbrances including mortgages, liens, rights-of-way, servitudes, easements, etc. and documentation that the conservation servitude is not subordinate to any other easement or major lien. Sponsor shall provide a copy of the recorded document evidencing that any mortgages encumbering the property have been subordinated to the conservation servitude.

6. Execution of MBI: MBI signed by the Owner, Sponsor and CEMVN District Commander or his representative and approval by all participant IRT agencies; and

7. Work Schedule: Submission of the timetable for implementing work identified in the permit, MWP or elsewhere in this MBI.

G. Subsequent Credit Releases

Prior to each credit release, the Sponsor shall provide to CEMVN an electronic copy of the monitoring report with information necessary to document successful attainment of required milestones. Following review of such documentation and a finding that required milestones were achieved. CEMVN will notify the Sponsor and the IRT in writing of its findings with respect to the Bank's attainment of its success criteria and determination for the number of credits approved for release.

XII. MODIFICATION OF THIS MBI

A. Minor Modification to MBI

1. This MBI is subject to written modification as mutually agreed to by the IRT and the Sponsor. The streamlined review process set forth in 33 CFR 332.8(g)(2) may be used for modifications that involve changes reflecting adaptive management for the Bank, credit release, changes in credit releases and credit release schedules, and changes that the district engineer determines not to be significant in accordance to procedures in 33 CFR 332.8(g)(2) *Streamlined Review Process*.

2. Should changes in this MBI be required by CEMVN that are not acceptable to the Sponsor, the Sponsor may elect to end his participation and close the Bank. At that time, the procedures outlined in Section XII.C. below will be followed.

B. Major Modifications to the MBI

1. Expansion of Addendum to the Bank

Modification of the MBI to include the expansion of the Bank to include additional acreage will be processed in accordance with 33 CFR 332.8(d) and 332.8(g)(1). Requests to expand the Bank will be considered only in instances where (1) the additional acreage is located on the same parcel of land or on a parcel of land contiguous to the Bank and (2) CEMVN determines that the natural composition, structure, functions, and processes performed by the restored/enhanced wetland community are the same as those outlined in this MBI. For the modification of this MBI the amendment will contain the following:

a. Detailed description of existing conditions of the Property identifying existing and prior land uses, vegetation, hydrology alterations and soils;

b. A MWP that details the proposed hydrologic and vegetative restoration/enhancement work that is necessary to produce the mitigation credits;

- c. Drawings depicting the site showing its location to other mitigation sites authorized by this MBI, different mitigation types, soils and hydrology; also drawings depicting the work required; vicinity map, a plan view depicting the proposed work and typical cross-sections of that work;
- d. A DA issued wetland determination;
- e. A title opinion and survey clearly identifying any existing encumbrances on the Property;
- f. A draft conservation servitude;
- g. A draft of the mechanism to be used to secure the necessary Construction and Establishment financial assurance; and
- h. A draft of the mechanism to be used to establish the necessary Long-Term Maintenance and Protection account.

CEMVN will determine if the work identified in the MWP requires a DA permit. A DA permit application is not required with the prospectus, but the Sponsor may choose to submit an application at this time as obtaining any and all permits is a prerequisite to selling credits.

A public interest review will be required for each addendum. The prospectus, MWP and drawings will be advertised by public notice for a minimum of thirty days to obtain public comments.

CEMVN, in consultation with the IRT, will evaluate each proposed property. The evaluation will typically require an inspection of the property and review of the prospectus and restoration plan. If warranted, the IRT will recommend modifications to the proposed restoration plan. By signing this MBI, the agencies are under no obligation to accept future addenda. Each addendum will be evaluated on its own merit.

A separate credit assessment will be conducted to determine habitat values of each addendum.

The mutually agreed upon MWP will be signed by designated authorities for each IRT member and included as an amendment to this MBI and subject to all its requirements, conditions and terms.

2. Exclusions of Approved Mitigation Site

The Sponsor may elect to exclude a portion of the Property on which no credits have been sold from the Bank. However, notification and approval by CEMVN must be obtained by the Sponsor prior to removal from the Bank.

Reduction in Bank size may adversely affect future releases of mitigation credits and financial assurances. Additionally, CEMVN, in consultation with the IRT, will re-evaluate the credit value per acre for the portion of the site remaining in the Bank. Should the re-evaluation of credits determine that debits exceed the available credits produced by the acres remaining in the Bank, CEMVN may require that a portion of the area to be excluded remain in the Bank to make up the credit difference caused by the reduction in Bank size.

After CEMVN, in consultation with the IRT, has approved the exclusion, the Owner may, with approval from the Sponsor, Holder and CEMVN, modify the conservation servitude to remove the servitude from that portion of the Property excluded, allowing however, as sufficient buffer to protect the integrity of the remaining bank.

C. Termination of This MBI

1. Should CEMVN, in consultation with the IRT, determine that the Sponsor is in material default of any provision of the MBI for this Bank, CEMVN may require such corrective actions as, as it deems necessary. If CEMVN determines that the Sponsor (or its agents or employees) has engaged in any misrepresentation, misapplication, misappropriation, improper management, or non-disclosure of pertinent information, CEMVN may require termination of this MBI or such other corrective action as it deems appropriate. Owner and Sponsor acknowledge and agree that all obligations hereunder that pertain to the credits sold or transferred prior to termination of the MBI shall have no effect on the perpetual conservation servitude granted by Owner over the Property in accordance with Louisiana law La. R.S. 9:1271, et seq. and 33 CFR § 332.8(t) except as set forth in paragraph C.3. below.

2. In the event that the MBI is terminated, CEMVN will:

a. Revise the Bank's credit allotment based on the work completed at closure

b. Review the credits already sold by the Bank and the corresponding mitigation requirements for DA Permits assumed by the Sponsor; and

c. Determine whether the success criteria achieved by the previously sold credits/acreage are sufficient to meet current and outstanding mitigation requirements or whether additional credits are required to satisfy the DA Permit mitigation obligations assumed by the Sponsor. Should additional credits be needed to satisfy the Sponsor's DA Permit mitigation obligations, those obligations (as determined by CEMVN) may be satisfied by either:

i). Completion of implementation of the MWP and achievement of the performance standards set forth in the MWP on additional acreage within the Bank; or

ii). The purchase of appropriate mitigation credits from another CEMVN approved Bank.

3. Upon termination of this MBI, the conservation servitude shall remain in full force and effect on those lands for which credits have been sold. In addition, a buffer sufficient to protect the integrity of the Bank, as determined by CEMVN in consultation with the IRT, shall be established and protected by the conservation servitude. Depending on the success level of the acreage sold as credits, additional acreage also may be required to satisfy the mitigation obligations assumed by the Sponsor. The Owner shall record any CEMVN approved and duly executed, revised conservation servitude in the Mortgage and Conveyance Office of the parish where the land is located and shall provide a copy of the recorded document to CEMVN. The conservation servitude shall remain in full force and effect on:

a. that portion of the Property representing credits sold;

b. that portion of the Property representing any deficit between the mitigation obligations assumed by the Sponsor (through credits sold) and the mitigation obligation satisfied by the Bank as described in 2.c. above; and

c. that portion of the Property determined necessary by CEMVN in consultation with the IRT, to provide a buffer sufficient to protect the integrity of the Bank.

4. In the event of the negligent or wrongful act or failure to act of the Owner, Sponsor or their respective managers, partners, employees, contractors, or agents, including but not limited to misrepresentation, misapplication, misappropriation, improper management, non-disclosure of pertinent information or non-compliance with the terms of this MBI, CEMVN and other IRT members may void their recognition of the Bank and/or terminate their future participation in this MBI. All funds in the Long-term escrow account, if any, will be forfeited to the Holder or to a long-term Steward or a CEMVN designee. Additionally, CEMVN and the IRT reserve the right to prosecute any negligent or wrongful act or failure to act including any intentional misrepresentation, misappropriation, non-disclosure of pertinent information, or non-compliance with the terms of this MBI to the fullest extent of the law.

D. Termination of Participation

IRT members may terminate their participation upon written notification to all signatory parties without invalidating this MBI. Participation of the IRT member seeking termination will end 30 days after written notification. Termination by one member of the IRT of its involvement in this MBI shall not terminate the MBI or affect the roles of the remaining members of the IR, or the Sponsor or Owner. Remaining credits authorized solely under the authority of the withdrawing agency for use in that agency's programs will

no longer be available for use to satisfy the requirements of that agency's program. Nothing in this Section is intended or shall be construed to limit the legal or equitable remedies (including specific performance and injunctive relief) available to the IRT members in the event of a threatened or actual breach of this MBI by the Sponsor.

XIII. TRANSFER OF PROPERTY OR SPONSORSHIP

All transfers of any interest in the Property or sponsorship are subject to the applicable provisions of the Conservation Servitude.

A. Transfers of Bank Property

1. The Owner may sell, assign, convey or otherwise transfer its interest in the Property at any time provided that any such transfer on or after the execution date of this MBI must be made in accordance with and subject to this MBI and the Conservation Servitude and the following conditions:

a. The transferee is able to assume and agrees to assume the obligations of the Owner as set forth in this MBI; and

b. The transferee understands and agrees to the allowed/prohibited uses of the Property as set forth in the conservation servitude.

2. Notice of Property Transfer

a. The Owner must provide notice to CEMVN and to the Sponsor (if different from the Owner) that he intends to transfer the Property at least 60 days prior to the transfer. This notice must include the proposed transferee's name and the name of its authorized representative, if different, its address and phone number, the anticipated date of the transfer, and a statement signed by the proposed transferee that the Owner has:

i. Provided to it copies of this MBI and the Conservation Servitude;

ii. Explained the allowed/prohibited uses of the Property; and

iii. Advised that any transfer of the Property is subject to the terms and conditions contained in the MBI.

b. The Sponsor also must provide notice to CEMVN of any transfer of the bank Property by the Owner at least 60 days prior to the transfer or within 5 business days of learning of such transfer, whichever is earlier. This obligation continues until the Sponsor has provided the required notice to CEMVN even after the Property has been transferred. The Owner and the Sponsor may submit a joint notice, in which case the notice shall be clearly identified as such. The Sponsor's notice must include the

proposed transferee's name and the name of its authorized representative, if different, its address and phone number, the anticipated date of the transfer, and a statement signed by the proposed transferee that the Sponsor has:

- i. Provided to it copies of this MBI and the Conservation Servitude;
 - ii. Explained the allowed/prohibited uses of the Property; and
 - iii. Advised that any transfer of the Property is subject to the terms and conditions contained in the MBI.
- c. After receipt of the notice of transfer, CEMVN, in consultation with the IRT, may seek additional information about the proposed transferee and its fitness to assume the obligations of Owner from the current Owner, the proposed transferee, or from the Sponsor. Additionally, the Sponsor may submit any information it deems relevant to the transfer to CEMVN.
- d. Any transfer of the ownership made without the required notice by Sponsor may, at the discretion of CEMVN, in consultation with the IRT, result in a suspension of credit sales until the Sponsor provides the information required in the notice.
3. At the time of the transfer of the Property, the transferee must sign this MBI as Owner and attest as follows, which statements shall be typed above the transferee's signature on the MBI:
- a. That it has read and understands and agrees to the terms and conditions of the MBI and the conservation servitude; and
 - b. That it agrees to assume all obligations and responsibilities of the Owner contained in this MBI.
4. Upon execution of the MBI by the transferee/new owner, all obligations of the Owner pursuant to this MBI become those of the transferee/new owner.
5. From and after the date of any transfer by the Owner of its interest in the Property, the transferor shall have no further obligations hereunder and all references to the Owner in this MBI shall thereafter refer to the transferee, except that the transferor's liability for acts, omissions, breaches or other compliance issues occurring prior to the transfer shall survive the transfer.

B. Transfer of Sponsorship

1. The Sponsor may sell, assign, convey or otherwise transfer its interest in the Bank at any time provided that the Sponsor is in full compliance with all requirements of this MBI (including all financial assurance requirements) and the transferee provides a

written statement agreeing to assume the obligations of the Sponsor as set forth in this MBI.

2. Notice of Change of Sponsor

a. The Sponsor must provide notice of its intent to transfer the sponsorship to the IRT, through CEMVN, and to the Owner at least 60 days prior to the transfer. This notice must include:

i) The proposed transferee's name and the name of its authorized representative, if different, its address and phone number, and the anticipated date of the transfer;

ii) A statement signed by the proposed transferee that: (a) the Sponsor has provided to it copies of this MBI, the conservation servitude, ledgers and financial statements; and (b) it will assume all of the obligations and responsibilities of the Sponsor as set forth in the MBI upon transfer of the bank;

iii) The proposed transferee's qualifications (background, resources and experience) to perform the Sponsor's responsibilities;

b. The Sponsor must also provide in the notice information relative to the current condition of the Bank, which information must also be provided to the proposed transferee. This information must include:

i) Current (*i.e.*, within 30 days) financial statements for all financial assurances issued by the providers of those assurances;

ii) A current ledger listing all credit transactions for the Bank and the required information for each transaction; and

iii) A monitoring report providing a description of current conditions including: (a) a discussion of the status of the restoration of wetland hydrology and remaining work (if any) necessary to fully establish hydrology; (b) the general condition of seedlings (survivorship by species) and a statement as to whether the survivability milestone will be met at the next monitoring report; and (c) an indication of the degree of exotic/invasive species density (average stems per acre) and measures required to control them.

3. At the time of the transfer of the sponsorship, the transferee must sign this MBI as the Sponsor and attest as follows, which statements shall be typed above the transferee's signature on the MBI:

a. That it has read and understands and agrees to the terms and conditions of the MBI and the Conservation Servitude; and

- b. That it agrees to assume all of the obligations and responsibilities of the Sponsor contained in this MBI.
4. The new Sponsor must provide to CEMVN a copy of the executed MBI and a copy of the executed Mitigation Bank Transfer Form.
5. Any transfer of the sponsorship made without the written 60-day notification to the IRT may, at the discretion of the IRT, result in suspension of credit sales until the transferee/new Sponsor provides the information required in the notice, signs the MBI as Sponsor, and provides a copy of the executed MBI to the IRT.
6. From and after the date of any transfer by Sponsor of its interest in the sponsorship, the transferor shall have no further obligations hereunder and all references to Sponsor in this MBI shall thereafter refer to the transferee, except that the transferor's liability for acts, omissions, breaches or other compliance issues occurring prior to the transfer shall survive the transfer.

XIV. ESTABLISHMENT OF STEWARD

Should the Sponsor choose to designate a Long-term Steward, the Sponsor will provide CEMVN with written notice of his intent to designate one at least 60 days prior to the effective date of the Steward's assumption of the responsibilities. This notice must include the proposed Steward's name and the name of its authorized representative, if different, its address and phone number, and the anticipated date of the transfer. Once the IRT has determined the qualifications of and accepted the Long Term Steward chosen by the Sponsor, to assume the responsibilities for the stewardship over the Property, CEMVN must be provided with a statement signed by the proposed Steward that the Sponsor has:

- A. Provided to it copies of this MBI and the Conservation Servitude;
- B. Explained the allowed/prohibited uses of the Property; and
- C. Transferred any remaining C&E financial assurance and Long-term Maintenance and Protection endowment funds to accounts established by the Long-term Steward and approved by CEMVN.

XV. BANK TRANSITION

When all success criteria have been attained and all credits have been sold then all construction financial assurance would have been returned to the Sponsor and the long-term management is initiated. Unless such responsibility is transferred, with prior approval of CEMVN to a Long-term Steward, the Sponsor will remain responsible for 1)

compensatory mitigation for any DA permit for which it used/sold Bank credits; and 2) the long-term management maintenance, monitoring and protection of the mitigation represented by those credits.

XVI. OTHER PROVISIONS

A. Disclaimer and Notice.

This MBI does not in any manner affect statutory authorities and responsibilities of the signatory parties.

USACE approval of this Instrument constitutes the regulatory approval required for the Cane Bayou Mitigation Bank to be used to provide compensatory mitigation for DA permits pursuant to 33 CFR 332.8(a)(1). This Instrument is not a contract between the Sponsor or Property Owner and USACE or any other agency of the federal government. Any dispute arising under this Instrument will not give rise to any claim by the Sponsor or Property Owner for monetary damages. This provision is controlling notwithstanding any other provision or statement in the Instrument to the contrary.

B. Warranties and Representations of Owner/Sponsor/Holder.

Owner/Sponsor hereby represents and warrants as follows:

1. It is a political subdivision of the State of Louisiana and that it is qualified to do business in Louisiana and in every jurisdiction in which it is required to be qualified..
2. It has the full power and authority to enter into this MBI and that its signatories are authorized to transact business and enter contracts on its behalf; and
3. The execution and performance of its obligations under the MBI will not constitute a breach of any other agreement or a violation of any ordinance statute, law or regulation to which it is a party or by which it is bound.

C. Compliance with Laws.

Owner and Sponsor and Holder and/or Third Party each represent, warrant and covenant that it is and will remain in compliance and abide with any and all statutes, laws, ordinances, rules and regulations promulgated by any government entity which are applicable to it.

D. Non-reporting NWP.

The Sponsor agrees not to utilize a non-reporting Nationwide Permit or Regional Permit under Section 404 of the Clean Water Act to impact any Waters of the United

States on the Property. Notification shall be required for the use of any Nationwide Permit and/or Regional Permit in connection with this Bank.

E. Dispute Resolution.

Resolution of disputes about amendments to this MBI shall be in accordance with 33 CFR § 332.8(e). If a dispute arises about the application of this MBI any party may raise the issue to CEMVN. CEMVN will convene a meeting of the IRT, or initiate another appropriate forum for communication, typically within twenty days of receipt of notice of the dispute. CEMVN will fully consider comments provided by the IRT and the Sponsor, if provided, in reaching its decision. Ultimately CEMVN is responsible for making final decisions regarding the use and performance of the Bank and the sale of its credits. Disputes related to satisfaction of success criteria may be subject to independent review from government agencies or academia that is not part of the IRT. The IRT will evaluate this input and determine whether the success criteria are met.

Any dispute arising under this Instrument will not give rise to any claim by Sponsor or Property Owner for monetary damages.

F. Overall Performance.

If CEMVN, in consultation with the IRT determines that the Bank is not performing according to the standards and criteria set forth in this MBI, credit use/sales will be suspended until the Sponsor in consultation with CEMVN has developed an approved remedial action plan and performed the work defined in the remedial action plan necessary to produce additional credits. The Sponsor will provide to the IRT the remedial action plan within 60 days of notification of any deficiency. Following IRT approval of the remedial action plan, the Sponsor will conduct the remedial action measures prior to the end of the nearest growing season. Subsequent adaptive management measures may be required by the IRT. Use/Sale of credits will not resume until remedial actions have been taken. The Sponsor will continue to provide monitoring reports as specified in this document unless determined to be unnecessary by the IRT.

G. Specific Language of MBI Shall Be Controlling.

The Parties intend the provisions of this MBI and each of the documents incorporated by reference in it to be consistent with each other, and for each document to be binding in accordance with its terms. To the fullest extent possible, these documents shall be interpreted in a manner that avoids or limits any conflict between or among them. However, if and to the extent that specific language in this MBI conflicts with specific language in any document, other than the Conservation Servitude, that is incorporated into this MBI by reference, the specific language within the MBI shall be controlling.

Cane Bayou Mitigation Bank
MVN 2009-02402
Mitigation Banking Instrument

H. Notice.

Any notice required or permitted hereunder shall be deemed to have been given either (i) when delivered by hand, or (ii) three (3) days following the date deposited in the United States mail, postage prepaid, by registered or certified mail, return receipt requested, or (iii) sent by Federal Express or similar next day nationwide delivery system, addressed as follows (or addressed in such other manner as the party being notified shall have requested by written notice to the other party):

Sponsor and Landowner	St. Tammany Parish Government c/o Ms. Gina Campo, CAO P. O. Box 628 Covington, LA 70434 gcampo@stp.gov 985-898-2445
CEMVN	U.S. Army Corps of Engineers, New Orleans District Regulatory Branch CEMVN-OD-S 7400 Leake Avenue New Orleans, LA 70118 Attn: Jacqueline Farabee Environmental Resources Specialist Special Projects and Policy Section
USEPA	U.S. Environmental Protection Agency, Region 6 1445 Ross Avenue, Suite 1200 Mail Code: 6WQ Dallas, TX 75202-2733 Attn: Raul Gutierrez, Ph.D.
LDWF	Louisiana Department of Wildlife and Fisheries Habitat Section 2000 Quail Drive Baton Rouge, LA 70808 Attn: Matt Weigel

I. Entire Agreement.

This MBI constitutes the entire agreement between the parties concerning the subject matter hereof and supersedes all prior agreements or undertakings.

J. Invalid Provisions.

In the event any one or more of the provisions contained in this MBI are held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or

unenforceability will not affect any other provisions hereof, and this MBI shall be construed as if such invalid, illegal or unenforceable provision had not been contained herein.

K. Headings and Captions.

Any paragraph heading or captions contained in this MBI shall be for convenience of reference only and shall not affect the construction or interpretation of any provisions of this MBI.

L. Counterparts.

This MBI may be executed by the parties in any combination, in one or more counterparts, all of which together shall constitute but one and the same instrument.

M. Binding.

This MBI shall be immediately, automatically, and irrevocably binding upon the Sponsor and its heirs, successors, assigns and legal representatives upon execution by the Sponsor and the CEMVN, even though it may not, at that time or in the future, be executed by the other potential parties to this MBI. The execution of this MBI by EPA, LDWF, or the U.S. Fish and Wildlife Service, or other agency, city or county shall cause the executing agency to become a party to this MBI upon execution, even though all or any of the other potential parties have not signed the MBI. Execution does not signify the agencies' agreement with the use of credits in the Bank in connection with any specific permit or project.

N. Liability of Regulatory Agencies.

The responsibility for financial success or loss and any risk to the investment undertaken by the Sponsor rests solely with the Sponsor. The regulatory agencies that are parties to this MBI administer their regulatory programs to best protect and serve the public's interest in its waterways, and not to guarantee the financial success of Banks, specific individuals, or entities. Accordingly, there is no guarantee of profitability for any individual Bank. Sponsors should not construe this MBI as a guarantee in any way that the agencies will ensure sale of credits from this Bank or that the agencies will forgo other mitigation options that may also serve the public interest. Since the agencies do not control the number of mitigation banks proposed or the resulting market impacts upon success or failure of individual banks, in depth market studies of the potential and future demand for credits are the sole responsibility of the bank proponent. Sponsor shall have no right to monetary damages and shall have no right to claim or to recover a loss of anticipated revenues based on any decision by CEMVN and/or based on CEMVN's administration of its mitigation banking program and/or this mitigation bank.

Cane Bayou Mitigation Bank
MVN 2009-02402
Mitigation Banking Instrument

XVII. Signature pages

A. Property owner and Sponsor



PATRICIA P. BRISTER
PRESIDENT, ST. TAMMANY PARISH
Cane Bayou Mitigation Bank

10-24-18
Date

Cane Bayou Mitigation Bank
MVN 2009-02402
Mitigation Banking Instrument

B. CEMVN

Martin S. Mayer

MARTIN S. MAYER
CHIEF, REGULATORY BRANCH
CEMVN
Cane Bayou Mitigation Bank

21 November 2018

Date

Cane Bayou Mitigation Bank
MVN 2009-02402
Mitigation Banking Instrument

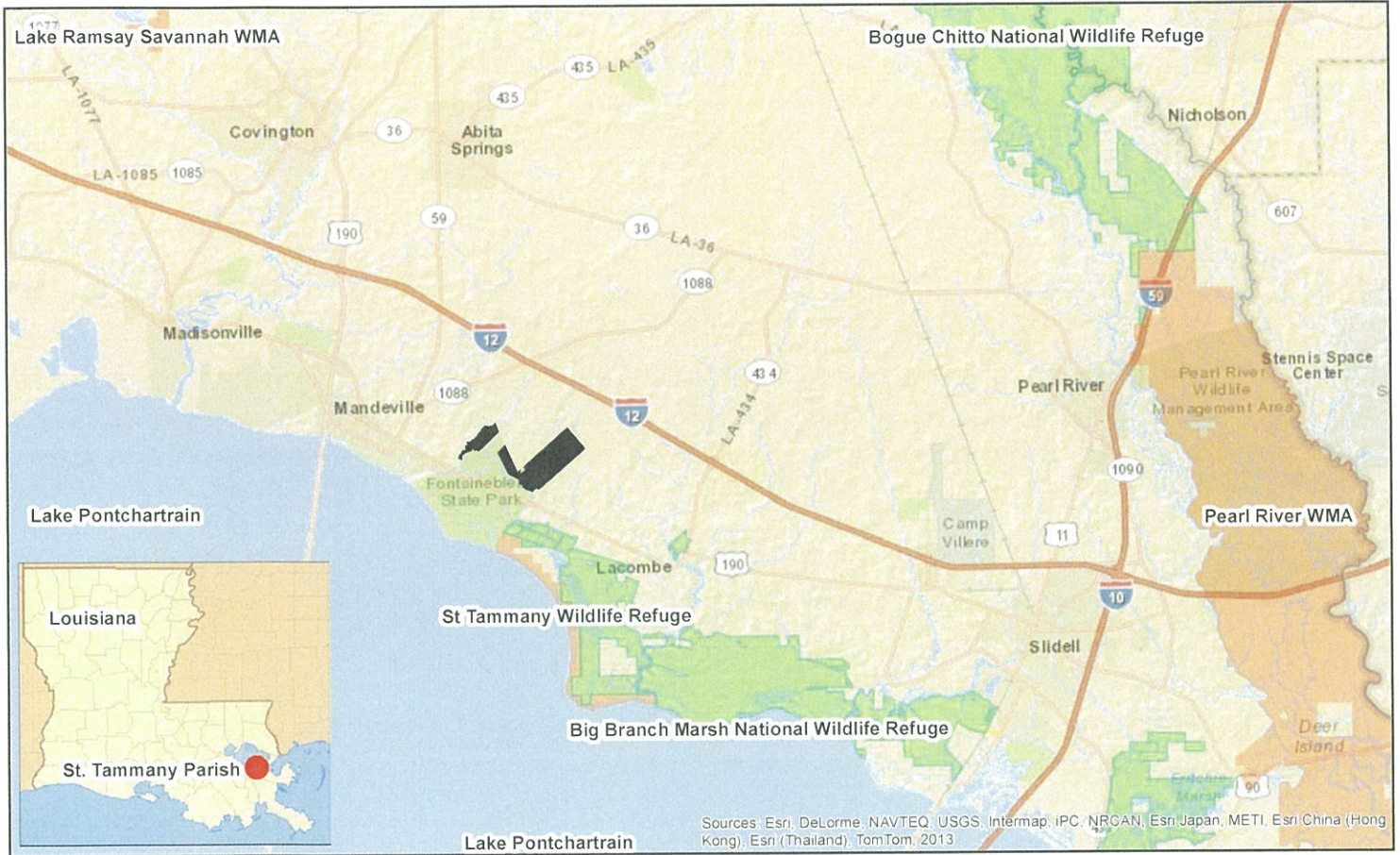
XVI. ATTACHMENTS

ATTACHMENT A. MAPS

Cane Bayou Mitigation Bank
Mitigation Banking Instrument

XVI. ATTACHMENTS

ATTACHMENT A. MAPS



Legend

- Cane Bayou Mitigation Bank
- National Wildlife Refuges
- LDWF WMA Refuge

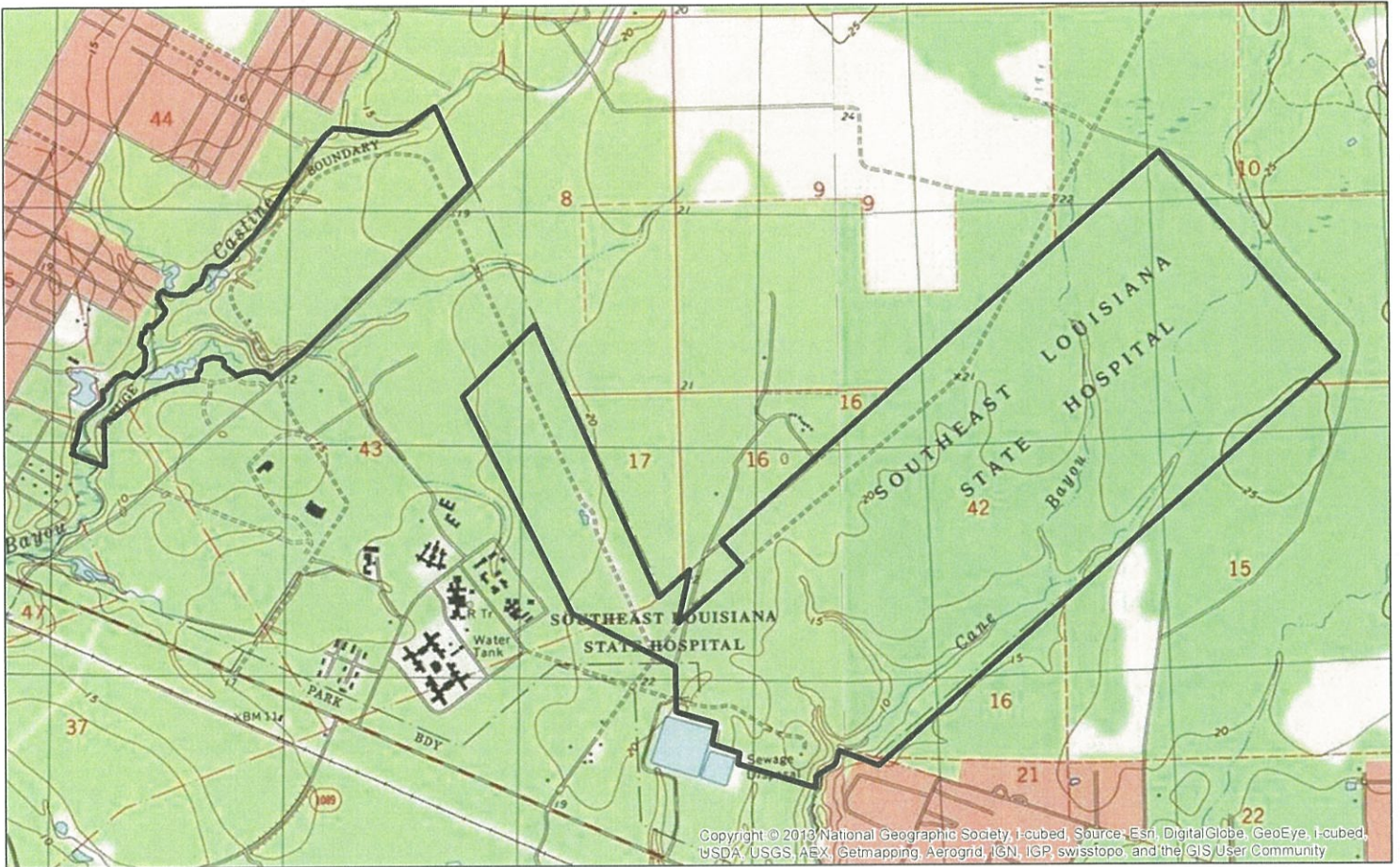
Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Vicinity Map
Figure 1

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: November 5, 2015

N

0 1 2 4 6
 Miles




Legend

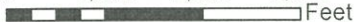
 Cane Bayou Mitigation Bank

Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

Mandeville and Lacombe, LA Quadrangles
 USGS Topographic Map
 Figure 2

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: November 5, 2015

N 

0 1,300 2,600 3,900
 Feet 



Section 1

Section 2

Source: Esri, DigitalGlobe, GeoEye, IGN, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend


 Cane Bayou Mitigation Bank

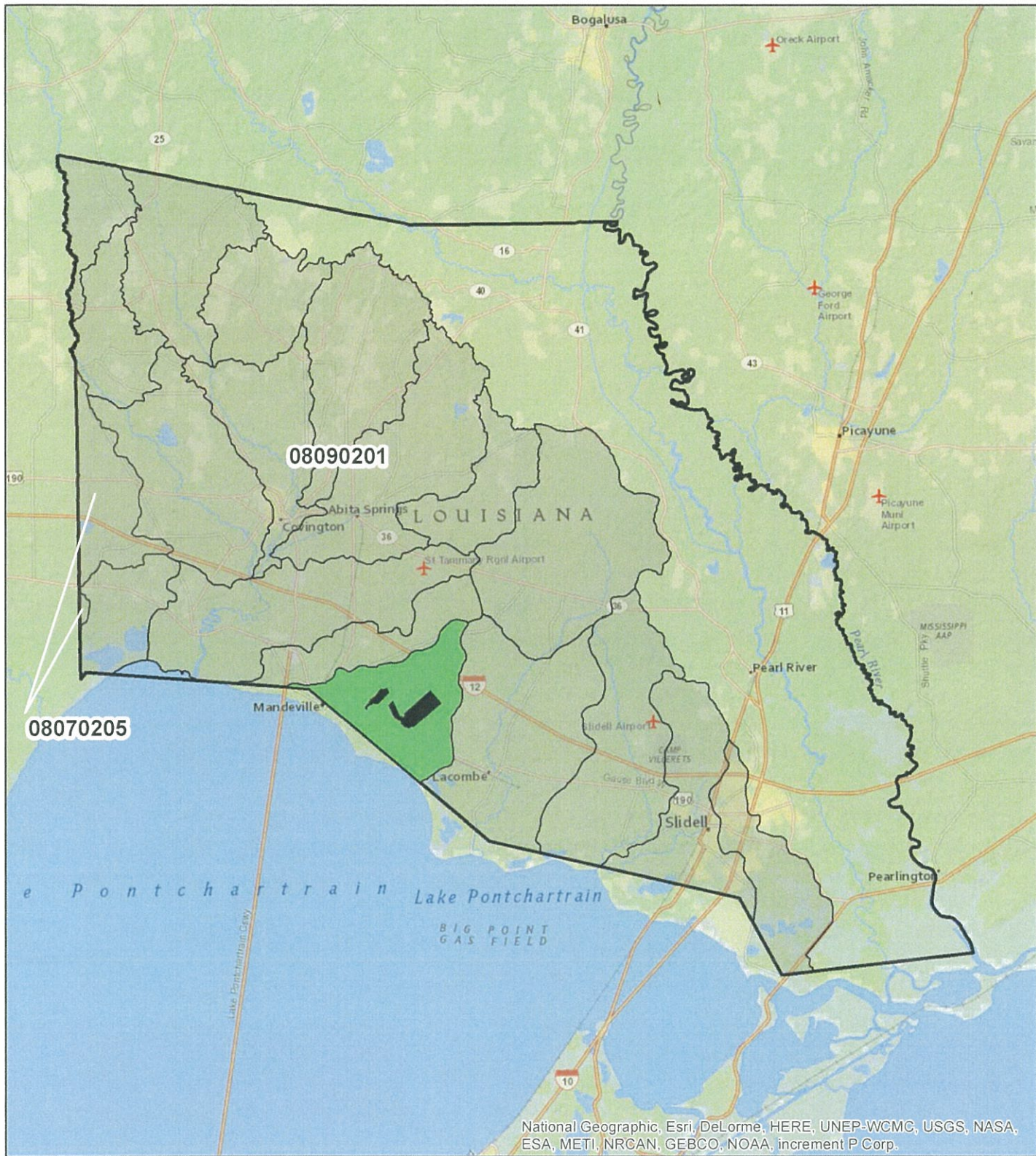
Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

2013 Aerial Photo
Figure 3

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: November 5, 2015






0 1,200 2,400 3,600 Feet

N 



National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Legend

-  Cane Bayou Mitigation Bank
-  Lake Pontchartrain Basin in St. Tammany Parish
-  St. Tammany Parish
-  Watershed Boundary
-  Bayou Castine-Cane Bayou Watershed


Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Bayou Castine-Cane Bayou
Watershed and Proposed
Service Area
(Lake Pontchartrain Basin)


Figure 4

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: December 29, 2015

N



0 4 8
 Miles



CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

ATTACHMENT MBI - B.

Survey and Legal Description of CBMB

Final Title Report/Opinion

Subordination Letter(s)

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

Survey

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

Legal Description

WEST PARCEL CBMB

Legal Description
Of
203.535 Acres

A certain parcel of ground situated in Sections 37 and 43, Township 8 South, Range 12 East, Greensburg Land District, St. Tammany Parish, Louisiana, and being more fully described as follows:

From the corner common to Sections 17, 42 and 43, T-8-S, R-12-E, run North 24 degrees 08 minutes 33 seconds West a distance of 6285.86 feet to the POINT OF BEGINNING

From the POINT OF BEGINNING, run South 45 degrees 08 minutes 15 seconds West a distance of 3,350.44 feet; thence South 50 degrees 40 minutes 36 seconds West a distance of 529.52 feet; thence North 39 degrees 33 minutes 25 seconds West a distance of 141.99 feet; thence North 57 degrees 06 minutes 30 seconds West a distance of 72.27 feet; thence North 81 degrees 01 minutes 55 seconds West a distance of 103.00 feet; thence South 82 degrees 43 minutes 43 seconds West a distance of 169.14 feet; thence South 65 degrees 17 minutes 39 seconds West a distance of 123.78 feet; thence North 35 degrees 33 minutes 07 seconds West a distance of 30.70 feet; thence North 52 degrees 22 minutes 01 seconds West a distance of 78.89 feet; thence North 54 degrees 10 minutes 36 seconds West a distance of 118.87 feet; thence North 00 degrees 00 minutes 00 seconds East a distance of 67.79 feet; thence North 41 degrees 38 minutes 54 seconds West a distance of 42.97 feet; thence North 79 degrees 25 minutes 55 seconds West a distance of 136.18 feet; thence South 70 degrees 29 minutes 37 seconds West a distance of 149.60 feet; thence South 26 degrees 34 minutes 37 seconds West a distance of 59.84 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 73.14 feet; thence South 40 degrees 00 minutes 06 seconds West a distance of 72.20 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 78.50 feet; thence South 80 degrees 59 minutes 46 seconds West a distance of 148.19 feet; thence South 78 degrees 41 minutes 45 seconds West a distance of 182.02 feet; thence South 70 degrees 15 minutes 46 seconds West a distance of 147.91 feet; thence South 71 degrees 35 minutes 56 seconds West a distance of 200.34 feet; thence South 59 degrees 11 minutes 51 seconds West a distance of 355.35 feet; thence South 49 degrees 44 minutes 06 seconds West a distance of 276.02 feet; thence South 76 degrees 13 minutes 31 seconds West a distance of 97.40 feet; thence South 40 degrees 02 minutes 42 seconds West a distance of 58.26 feet; thence South 00 degrees 44 minutes 01 seconds East a distance of 609.66 feet; thence North 68 degrees 49 minutes 04 seconds West a distance of 501.29 feet; thence North 04 degrees 09 minutes 51 seconds East a distance of 7.65 feet; thence North 51 degrees 34 minutes 07 seconds East a distance of 8.58 feet; thence North 63 degrees 49 minutes 41 seconds East a distance of 28.83 feet; thence North 20 degrees 30 minutes 19 seconds West a distance of 15.86 feet; thence North 05 degrees 44 minutes 44 seconds West a distance of 62.61 feet; thence North 49 degrees 28 minutes 55 seconds East a distance of 30.87 feet; thence North 50 degrees 06 minutes 25 seconds East a distance of 15.74 feet; thence North 12 degrees 37 minutes 32 seconds East a distance of 341.96 feet; thence North 32 degrees 18 minutes 26 seconds East a distance of 24.85 feet; thence North 66 degrees 55 minutes 33 seconds East a

distance of 27.60 feet; thence North 49 degrees 16 minutes 36 seconds East a distance of 350.47 feet; thence North 23 degrees 43 minutes 53 seconds East a distance of 31.14 feet; thence North 52 degrees 29 minutes 01 seconds West a distance of 12.59 feet; thence North 00 degrees 41 minutes 38 seconds East a distance of 86.05 feet; thence North 45 degrees 49 minutes 57 seconds West a distance of 8.24 feet; thence North 04 degrees 53 minutes 36 seconds East a distance of 12.08 feet; thence North 65 degrees 07 minutes 50 seconds East a distance of 72.59 feet; thence North 11 degrees 52 minutes 49 seconds East a distance of 50.41 feet; thence North 78 degrees 32 minutes 08 seconds East a distance of 30.30 feet; thence North 38 degrees 22 minutes 30 seconds East a distance of 142.69 feet; thence North 64 degrees 56 minutes 45 seconds East a distance of 149.61 feet; thence South 56 degrees 34 minutes 32 seconds East a distance of 69.39 feet; thence South 70 degrees 02 minutes 01 seconds East a distance of 57.29 feet; thence North 47 degrees 27 minutes 58 seconds East a distance of 199.90 feet; thence North 02 degrees 47 minutes 51 seconds East a distance of 46.97 feet; thence North 04 degrees 37 minutes 41 seconds East a distance of 90.39 feet; thence North 05 degrees 58 minutes 54 seconds East a distance of 56.83 feet; thence North 15 degrees 24 minutes 37 seconds West a distance of 79.82 feet; thence North 58 degrees 18 minutes 25 seconds West a distance of 47.24 feet; thence North 26 degrees 06 minutes 40 seconds West a distance of 34.65 feet; thence North 11 degrees 24 minutes 51 seconds East a distance of 147.77 feet; thence North 51 degrees 50 minutes 18 seconds East a distance of 9.03 feet; thence North 67 degrees 57 minutes 19 seconds East a distance of 30.18 feet; thence North 20 degrees 23 minutes 57 seconds East a distance of 39.46 feet; thence North 10 degrees 40 minutes 04 seconds East a distance of 32.10 feet; thence North 42 degrees 41 minutes 47 seconds East a distance of 20.52 feet; thence North 57 degrees 31 minutes 26 seconds East a distance of 33.05 feet; thence South 49 degrees 43 minutes 56 seconds East a distance of 32.96 feet; thence North 84 degrees 00 minutes 02 seconds East a distance of 26.74 feet; thence North 47 degrees 13 minutes 57 seconds East a distance of 144.63 feet; thence North 45 degrees 25 minutes 05 seconds East a distance of 27.37 feet; thence North 27 degrees 45 minutes 18 seconds East a distance of 20.27 feet; thence North 38 degrees 00 minutes 56 seconds East a distance of 58.67 feet; thence North 11 degrees 41 minutes 47 seconds East a distance of 48.93 feet; thence North 33 degrees 17 minutes 08 seconds West a distance of 40.07 feet; thence North 32 degrees 57 minutes 56 seconds West a distance of 156.89 feet; thence North 09 degrees 56 minutes 44 seconds West a distance of 24.46 feet; thence North 27 degrees 13 minutes 19 seconds East a distance of 36.58 feet; thence North 39 degrees 34 minutes 40 seconds East a distance of 31.15 feet; thence North 61 degrees 38 minutes 25 seconds East a distance of 53.45 feet; thence South 50 degrees 10 minutes 02 seconds East a distance of 51.63 feet; thence South 66 degrees 51 minutes 32 seconds East a distance of 34.28 feet; thence South 65 degrees 57 minutes 26 seconds East a distance of 29.18 feet; thence South 87 degrees 22 minutes 15 seconds East a distance of 86.44 feet; thence North 85 degrees 08 minutes 34 seconds East a distance of 132.11 feet; thence North 68 degrees 04 minutes 01 seconds East a distance of 28.34 feet; thence North 37 degrees 46 minutes 28 seconds East a distance of 17.04 feet; thence North 46 degrees 25 minutes 30 seconds East a distance of 126.55 feet; thence North 65 degrees 59 minutes 16 seconds East a distance of 61.80 feet; thence North 45 degrees 59 minutes 26 seconds East a distance of 41.32 feet; thence North 40 degrees 23 minutes 39 seconds East a distance of 12.42 feet; thence North 19 degrees 01 minutes

41 seconds East a distance of 200.31 feet; thence North 54 degrees 35 minutes 21 seconds East a distance of 21.26 feet; thence North 76 degrees 02 minutes 06 seconds East a distance of 51.20 feet; thence South 87 degrees 41 minutes 28 seconds East a distance of 122.67 feet; thence North 81 degrees 10 minutes 44 seconds East a distance of 46.00 feet; thence North 53 degrees 53 minutes 59 seconds East a distance of 47.95 feet; thence North 34 degrees 05 minutes 22 seconds East a distance of 34.35 feet; thence North 82 degrees 18 minutes 58 seconds East a distance of 20.70 feet; thence North 43 degrees 52 minutes 36 seconds East a distance of 123.05 feet; thence North 58 degrees 05 minutes 11 seconds East a distance of 23.79 feet; thence North 39 degrees 46 minutes 13 seconds East a distance of 27.06 feet; thence North 38 degrees 21 minutes 07 seconds East a distance of 44.10 feet; thence North 30 degrees 40 minutes 41 seconds East a distance of 57.92 feet; thence North 53 degrees 03 minutes 43 seconds East a distance of 31.61 feet; thence North 40 degrees 51 minutes 10 seconds East a distance of 57.11 feet; thence North 53 degrees 20 minutes 53 seconds East a distance of 122.16 feet; thence North 48 degrees 38 minutes 57 seconds East a distance of 25.43 feet; thence North 00 degrees 09 minutes 27 seconds West a distance of 24.54 feet; thence North 41 degrees 58 minutes 00 seconds East a distance of 130.89 feet; thence North 34 degrees 50 minutes 07 seconds East a distance of 581.03 feet; thence North 37 degrees 45 minutes 41 seconds East a distance of 47.08 feet; thence North 23 degrees 29 minutes 09 seconds East a distance of 31.13 feet; thence North 33 degrees 40 minutes 44 seconds East a distance of 210.41 feet; thence North 18 degrees 40 minutes 19 seconds East a distance of 33.57 feet; thence North 40 degrees 31 minutes 13 seconds East a distance of 27.17 feet; thence North 42 degrees 25 minutes 35 seconds East a distance of 94.93 feet; thence North 23 degrees 48 minutes 21 seconds East a distance of 17.39 feet; thence North 23 degrees 56 minutes 31 seconds East a distance of 30.43 feet; thence North 36 degrees 08 minutes 07 seconds East a distance of 51.05 feet; thence North 38 degrees 54 minutes 11 seconds East a distance of 575.62 feet; thence North 69 degrees 31 minutes 22 seconds East a distance of 20.10 feet; thence South 84 degrees 41 minutes 50 seconds East a distance of 22.14 feet; thence South 85 degrees 31 minutes 03 seconds East a distance of 424.62 feet; thence South 81 degrees 46 minutes 46 seconds East a distance of 117.95 feet; thence South 73 degrees 34 minutes 36 seconds East a distance of 27.14 feet; thence South 62 degrees 19 minutes 09 seconds East a distance of 56.17 feet; thence South 89 degrees 58 minutes 13 seconds East a distance of 91.58 feet; thence North 87 degrees 21 minutes 50 seconds East a distance of 85.37 feet; thence North 68 degrees 39 minutes 53 seconds East a distance of 222.76 feet; thence North 55 degrees 14 minutes 56 seconds East a distance of 262.28 feet; thence North 55 degrees 14 minutes 56 seconds East a distance of 254.54 feet; thence South 24 degrees 08 minutes 33 seconds East a distance of 1,261.95 feet to the POINT OF BEGINNING;

Said parcel contains 203.535 acres.

EAST PARCEL CBMB:

**Legal Description
of
966.389 Acres**

A certain parcel of ground situated in Sections 42 and 43, Township 8 South, Range 12 East, Greensburg Land District, St. Tammany Parish, Louisiana, and being more fully described as follows:

From the corner common to Sections 17, 42 and 43, T-8-S, R-12-E, and the POINT OF BEGINNING, run North 48 degrees 34 minutes 31 seconds East a distance of 581.38 feet; thence South 12 degrees 27 minutes 45 seconds West a distance of 765.14 feet; thence North 48 degrees 32 minutes 18 seconds East a distance of 1,204.37 feet; thence North 41 degrees 35 minutes 23 seconds West a distance of 450.19 feet; thence North 48 degrees 34 minutes 31 seconds East a distance of 8,237.29 feet; thence South 41 degrees 07 minutes 30 seconds East a distance of 3,831.24 feet; thence South 48 degrees 52 minutes 28 seconds West a distance of 574.69 feet; thence South 48 degrees 41 minutes 01 seconds West a distance of 8,072.99 feet; thence North 69 degrees 10 minutes 01 seconds West a distance of 599.75 feet; thence South 12 degrees 26 minutes 11 seconds West a distance of 170.88 feet; thence South 23 degrees 43 minutes 03 seconds West a distance of 27.81 feet; thence South 52 degrees 56 minutes 40 seconds West a distance of 34.72 feet; thence South 59 degrees 40 minutes 26 seconds West a distance of 251.47 feet; thence South 42 degrees 44 minutes 59 seconds West a distance of 45.44 feet; thence South 01 degrees 32 minutes 44 seconds East a distance of 147.17 feet; thence North 72 degrees 57 minutes 38 seconds West a distance of 1,150.36 feet; thence North 11 degrees 23 minutes 53 seconds East a distance of 153.19 feet; thence North 71 degrees 28 minutes 29 seconds West a distance of 409.16 feet; thence North 11 degrees 11 minutes 18 seconds East a distance of 294.18 feet; thence North 73 degrees 22 minutes 43 seconds West a distance of 580.12 feet; thence North 00 degrees 38 minutes 38 seconds West a distance of 656.30 feet; thence North 63 degrees 20 minutes 29 seconds West a distance of 1,615.19 feet; thence North 26 degrees 30 minutes 01 seconds West a distance of 3,196.27 feet; thence North 45 degrees 08 minutes 16 seconds East a distance of 1,423.01 feet; thence South 24 degrees 08 minutes 33 seconds East a distance of 3,986.10 feet to the POINT OF BEGINNING;

Said parcel contains 966.389 acres.

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

Final Title Report/Opinion

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John M. Dubreuil, Attorney
jdubreuil@selecttitlellc.net

April 28, 2017

The Parish of St. Tammany
P. O. Box 628
Covington, LA 70434

**RE: CANE BAYOU MITIGATION BANK
REVISED TITLE OPINION – 1,169.924 acres
Sections 37, 42 & 43, Township 8 South, Range 12 East
St. Tammany Parish**

Gentlemen:

I have this day completed a review of the survey of the following described properties by Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, as the same relates to and supplements my examination of title, dated December 18, 2015. The Parcels are more fully described according to the aforesaid survey as follows, to-wit:

PARCEL 1 – 966.389 acres:

A certain parcel of ground situated in Sections 42 and 43, Township 8 South, Range 12 East, Greensburg Land District, St. Tammany Parish, Louisiana, and according to the survey of Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, is more fully described as follows:

From the corner common to Sections 17, 42 and 43, T-8-S, R-12-E, and the POINT OF BEGINNING, run North 48 degrees 34 minutes 31 seconds East a distance of 581.38 feet; thence South 12 degrees 27 minutes 45 seconds West a distance of 765.14 feet; thence North 48 degrees 32 minutes 18 seconds East a distance of 1,204.37 feet; thence North 41 degrees 35 minutes 23 seconds West a distance of 450.19 feet; thence North 48 degrees 34 minutes 31 seconds East a distance of 8,237.29 feet; thence South 41 degrees 07 minutes 30 seconds East a distance of 3,831.24 feet; thence South 48 degrees 52 minutes 28 seconds West a distance of 574.69 feet; thence South 48 degrees 41 minutes 01 seconds West a distance of 8,072.99 feet; thence North 69 degrees 10 minutes 01 seconds West a distance of 599.75 feet; thence South 12 degrees 26 minutes 11 seconds West a distance of 170.88 feet; thence South 23 degrees 43 minutes 03 seconds West a distance of 27.81 feet; thence South 52 degrees 56 minutes 40 seconds West a distance of 34.72 feet; thence South 59 degrees 40 minutes 26 seconds West a distance of 251.47 feet; thence South 42 degrees 44 minutes 59 seconds West a distance of 45.44 feet; thence South 01 degrees 32 minutes 44 seconds East a distance of 147.17 feet; thence North

72 degrees 57 minutes 38 seconds West a distance of 1,150.36 feet; thence North 11 degrees 23 minutes 53 seconds East a distance of 153.19 feet; thence North 71 degrees 28 minutes 29 seconds West a distance of 409.16 feet; thence North 11 degrees 11 minutes 18 seconds East a distance of 294.18 feet; thence North 73 degrees 22 minutes 43 seconds West a distance of 580.12 feet; thence North 00 degrees 38 minutes 38 seconds West a distance of 656.30 feet; thence North 63 degrees 20 minutes 29 seconds West a distance of 1,615.19 feet; thence North 26 degrees 30 minutes 01 seconds West a distance of 3,196.27 feet; thence North 45 degrees 08 minutes 16 seconds East a distance of 1,423.01 feet; thence South 24 degrees 08 minutes 33 seconds East a distance of 3,986.10 feet to the POINT OF BEGINNING. Said parcel contains 966.389 acres.

PARCEL 2 – 203.535 acres:

A certain parcel of ground situated in Sections 37 and 43, Township 8 South, Range 12 East, Greensburg Land District, St. Tammany Parish, Louisiana, and according to the survey of Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, is more fully described as follows:

From the corner common to Sections 17, 42 and 43, T-8-S, R-12-E, run North 24 degrees 08 minutes 33 seconds West a distance of 6285.86 feet to the POINT OF BEGINNING.

From the POINT OF BEGINNING, run South 45 degrees 08 minutes 15 seconds West a distance of 3,350.44 feet; thence South 50 degrees 40 minutes 36 seconds West a distance of 529.52 feet; thence North 39 degrees 33 minutes 25 seconds West a distance of 141.99 feet; thence North 57 degrees 06 minutes 30 seconds West a distance of 72.27 feet; thence North 81 degrees 01 minutes 55 seconds West a distance of 103.00 feet; thence South 82 degrees 43 minutes 43 seconds West a distance of 169.14 feet; thence South 65 degrees 17 minutes 39 seconds West a distance of 123.78 feet; thence North 35 degrees 33 minutes 07 seconds West a distance of 30.70 feet; thence North 52 degrees 22 minutes 01 seconds West a distance of 78.89 feet; thence North 54 degrees 10 minutes 36 seconds West a distance of 118.87 feet; thence North 00 degrees 00 minutes 00 seconds East a distance of 67.79 feet; thence North 41 degrees 38 minutes 54 seconds West a distance of 42.97 feet; thence North 79 degrees 25 minutes 55 seconds West a distance of 136.18 feet; thence South 70 degrees 29 minutes 37 seconds West a distance of 149.60 feet; thence South 26 degrees 34 minutes 37 seconds West a distance of 59.84 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 73.14 feet; thence South 40 degrees 00 minutes 06 seconds West a distance of 72.20 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 78.50 feet; thence South 80 degrees 59 minutes 46 seconds West a distance of 148.19 feet; thence South 78 degrees 41 minutes 45 seconds West a distance of 182.02 feet; thence South 70 degrees 15 minutes 46 seconds West a distance of 147.91 feet; thence South 71 degrees 35 minutes 56 seconds West a distance of 200.34 feet; thence South 59 degrees 11 minutes 51 seconds West a distance of 355.35 feet; thence South 49 degrees 44 minutes 06 seconds West a distance of 276.02 feet; thence South 76 degrees 13 minutes 31 seconds West a distance of 97.40 feet; thence South 40 degrees 02 minutes 42 seconds West a distance of 58.26 feet; thence South 00 degrees 44 minutes 01 seconds East a distance of 609.66 feet; thence North 68 degrees 49 minutes 04 seconds West a distance of 501.29 feet; thence North 04 degrees 09 minutes 51 seconds East a distance of 7.65 feet; thence North 51 degrees 34 minutes 07 seconds East a distance of 8.58 feet; thence North 63 degrees 49 minutes 41 seconds East a distance of 28.83

feet; thence North 20 degrees 30 minutes 19 seconds West a distance of 15.86 feet; thence North 05 degrees 44 minutes 44 seconds West a distance of 62.61 feet; thence North 49 degrees 28 minutes 55 seconds East a distance of 30.87 feet; thence North 50 degrees 06 minutes 25 seconds East a distance of 15.74 feet; thence North 12 degrees 37 minutes 32 seconds East a distance of 341.96 feet; thence North 32 degrees 18 minutes 26 seconds East a distance of 24.85 feet; thence North 66 degrees 55 minutes 33 seconds East a distance of 27.60 feet; thence North 49 degrees 16 minutes 36 seconds East a distance of 350.47 feet; thence North 23 degrees 43 minutes 53 seconds East a distance of 31.14 feet; thence North 52 degrees 29 minutes 01 seconds West a distance of 12.59 feet; thence North 00 degrees 41 minutes 38 seconds East a distance of 86.05 feet; thence North 45 degrees 49 minutes 57 seconds West a distance of 8.24 feet; thence North 04 degrees 53 minutes 36 seconds East a distance of 12.08 feet; thence North 65 degrees 07 minutes 50 seconds East a distance of 72.59 feet; thence North 11 degrees 52 minutes 49 seconds East a distance of 50.41 feet; thence North 78 degrees 32 minutes 08 seconds East a distance of 30.30 feet; thence North 38 degrees 22 minutes 30 seconds East a distance of 142.69 feet; thence North 64 degrees 56 minutes 45 seconds East a distance of 149.61 feet; thence South 56 degrees 34 minutes 32 seconds East a distance of 69.39 feet; thence South 70 degrees 02 minutes 01 seconds East a distance of 57.29 feet; thence North 47 degrees 27 minutes 58 seconds East a distance of 199.90 feet; thence North 02 degrees 47 minutes 51 seconds East a distance of 46.97 feet; thence North 04 degrees 37 minutes 41 seconds East a distance of 90.39 feet; thence North 05 degrees 58 minutes 54 seconds East a distance of 56.83 feet; thence North 15 degrees 24 minutes 37 seconds West a distance of 79.82 feet; thence North 58 degrees 18 minutes 25 seconds West a distance of 47.24 feet; thence North 26 degrees 06 minutes 40 seconds West a distance of 34.65 feet; thence North 11 degrees 24 minutes 51 seconds East a distance of 147.77 feet; thence North 51 degrees 50 minutes 18 seconds East a distance of 9.03 feet; thence North 67 degrees 57 minutes 19 seconds East a distance of 30.18 feet; thence North 20 degrees 23 minutes 57 seconds East a distance of 39.46 feet; thence North 10 degrees 40 minutes 04 seconds East a distance of 32.10 feet; thence North 42 degrees 41 minutes 47 seconds East a distance of 20.52 feet; thence North 57 degrees 31 minutes 26 seconds East a distance of 33.05 feet; thence South 49 degrees 43 minutes 56 seconds East a distance of 32.96 feet; thence North 84 degrees 00 minutes 02 seconds East a distance of 26.74 feet; thence North 47 degrees 13 minutes 57 seconds East a distance of 144.63 feet; thence North 45 degrees 25 minutes 05 seconds East a distance of 27.37 feet; thence North 27 degrees 45 minutes 18 seconds East a distance of 20.27 feet; thence North 38 degrees 00 minutes 56 seconds East a distance of 58.67 feet; thence North 11 degrees 41 minutes 47 seconds East a distance of 48.93 feet; thence North 33 degrees 17 minutes 08 seconds West a distance of 40.07 feet; thence North 32 degrees 57 minutes 56 seconds West a distance of 156.89 feet; thence North 09 degrees 56 minutes 44 seconds West a distance of 24.46 feet; thence North 27 degrees 13 minutes 19 seconds East a distance of 36.58 feet; thence North 39 degrees 34 minutes 40 seconds East a distance of 31.15 feet; thence North 61 degrees 38 minutes 25 seconds East a distance of 53.45 feet; thence South 50 degrees 10 minutes 02 seconds East a distance of 51.63 feet; thence South 66 degrees 51 minutes 32 seconds East a distance of 34.28 feet; thence South 65 degrees 57 minutes 26 seconds East a distance of 29.18 feet; thence South 87 degrees 22 minutes 15 seconds East a distance of 86.44 feet; thence North 85 degrees 08 minutes 34 seconds East a distance of 132.11 feet; thence North 68 degrees 04 minutes 01 seconds East a distance of 28.34 feet; thence North 37 degrees 46 minutes 28 seconds East a distance of 17.04 feet; thence North 46 degrees 25 minutes 30 seconds East a distance of 126.55 feet; thence North 65 degrees 59 minutes 16 seconds East a distance of 61.80

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ACQUISITION

Parcels 1 and 2 are a portion of the 1442.6 acre property as per survey of Kelly J. McHugh & Assoc., Inc., dated June 11, 2012, acquired by the Parish of St. Tammany from The State of Louisiana and The Department of Health and Hospitals by act dated June 15, 2012, registered in C.IN. # 1861096, and Map File # 5068, Parish of St. Tammany.

ABSTRACTS EXAMINED

This examination is based upon the abstract and research by Anthony V. Costa of Abstracts, L.L.C., dated **December 8, 2015**, brought current as of **February 27, 2017**, previously submitted to the examiner, and the examiner assumes no responsibility for the status of the title prior to the earliest recorded instrument examined dated **January 31, 1938**, and/or the failure of the abstractor to provide copies of any document that may affect the title, e.g., corporate resolutions, power of attorney, surveys, succession proceedings, divorce judgments, restrictions, servitudes, etc., inasmuch as this examination was done pursuant to Louisiana Uniform Title Standards. The abstract submitted for review complies with the requirements of LSA-R.S. 22:512(17)(b)(vi)(gg).

Subject to the title criticisms hereinafter stated, it is my opinion that, as of **February 27, 2017**, and as stated in my previous opinion dated December 18, 2015, good and marketable title to the subject property was vested in the following:

THE PARISH OF ST. TAMMANY

TITLE CRITICISMS

NONE, except as hereinafter delineated.

SURVEY

The examiner has been provided with a survey of the property by Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, and I suggest that an Act of Deposit be executed to record and file the survey of the CANE BAYOU MITIGATION BANK by Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, in the map records of St. Tammany Parish.

If the Parish of St. Tammany, or any political subdivision thereof, required official approval for the re-subdivision of the tract, the examiner assumes no responsibility in regard thereto.

ENCUMBRANCES

THE ABSTRACT EXAMINED IN 2015 (AS UP-DATED IN 2017) REFLECTED INSCRIPTIONS AGAINST THE PARISH OF ST. TAMMANY, TO WIT:

OPEN JUDGMENTS:

M.IN. # 1527255 – Judgment in 22nd J.D.C. # 2003-15625 in favor of Howell Carter, III, dated December 13, 2005, in the amount of \$20,000.00, etc. Reinscribed December 9, 2015, M.IN. # 2005679.

M.IN. # 1681226 – Judgment in 22nd J.D.C. # 2000-15539 in favor of Andrew B. Daray, et al, dated May 3, 2008, in the amount of \$50,510.00 and \$10,000.00, etc.

M.IN. # 1763411 – Judgment in 22nd J.D.C. # 2000-15539 in favor of Andrew B. Daray, et al, dated April 5, 2010, in the amount of \$42,510.00, etc.

PRESCRIBED LIEN:

M.IN. # 1616235 – Lien filed by Glass Contracting, Inc., dated March 29, 2007, in the amount of \$157,658.25. No Lis Pendens of record. **(NOT REDUCED TO JUDGMENT – LIEN IS PRESCRIBED)**

The above prescribed inscription should be cancelled accordingly.

EXCEPTIONS TO TITLE

In regards to the exceptions and servitudes that may be applicable, the survey of Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, contains the following disclaimer:

“The servitudes/right-of-ways shown hereon are at their approximate location as some deeds were not accurately plottable”

Exceptions to Title Shown on Title Policy:

The Parish of St. Tammany is the insured under a policy of owner’s title insurance issued by WFG NATIONAL TITLE INSURANCE COMPANY under Policy No. 3155422-00634441¹ dated June 18, 2012, issued by Breaux Title Company, L.L.C., on which the following exceptions from coverage were specifically noted. The survey by Kelly J. McHugh & Assoc., Inc., dated June 11, 2012, Map File #5068, and the survey by Kelly J. McHugh & Assoc., Inc. dated January 23, 2017, also contained notes on the exceptions by the surveyor which are shown hereinafter (with the surveyor’s notations of applicability shown in bold). The examiner has omitted any exception noted by the surveyor as inapplicable.^{2,3}

The Exceptions are as follows, to wit:

Right of Way in favor of United Gas Pipe Line Company, recorded in the official records of St. Tammany Parish, Louisiana, on August 7, 1941, as COB 152, page 61. **(Exception does affect subject property and is referenced on survey as access to gas line where it is located but is not plottable in width or length)**

Ownership the Louisiana Department of Conservation, or successor entity, of all improvements, buildings and their contents, equipment and building materials stored on the property transferred

¹ The Owner’s Title Policy No. 3155422-00634441 remains the primary title coverage of the present owner, and nothing in this opinion supersedes or replaces that coverage.

² Exceptions Nos. 2, 8, 12, 14, 15, 16, 17, 19, 20, 22, 24, 26, 31, 34, 35, 36 and 37 shown on the 1/23/2017 survey are also shown as exceptions in the title policy, but the survey indicates that they are inapplicable to the property.

³ Exceptions No. 3, 5, 9, 13, 18, 25, 29 and 30 shown on the 1/23/2017 survey were not included as exceptions in the title policy, but the survey indicates they do not affect the subject property.

pursuant to and as set forth in the Act of Donation recorded in the official records of St. Tammany Parish, Louisiana, on September 8, 1943, as COB 160, page 164. **(Exception does affect subject property and is not plottable)**

Restriction regarding the removal of timber as set forth in the act recorded in the official records of St. Tammany Parish, Louisiana, on January 7, 1948, as COB 181, page 405. **(Exception does affect subject property and is not plottable)**

Restrictions regarding loitering set forth in the act recorded in the official records of St. Tammany Parish, Louisiana, on January 10, 1948, as COB 181, page 420. **(Exception does affect subject property and is not plottable)**

Right of Way in favor of Central Louisiana Electric Company, Inc., recorded in the official records of St. Tammany Parish, Louisiana, on December 31, 1956, as COB 248, page 510. **(Exception does affect subject property and is not plottable)**

Right of Way in favor of Central Louisiana Electric Company, Inc., recorded in the official records of St. Tammany Parish, Louisiana, on November 12, 1957, as COB 257, page 557. **(Exception does affect subject property and is not plottable)**

Reservation of minerals and terms and conditions set forth in the Right of Way Agreement in favor of the St. Tammany Parish, recorded in the official records of St. Tammany Parish, Louisiana, on September 24, 1980, as COB 988, page 297, Instrument No. 449292, Map File # 3222. **(Exception does affect subject property and is plottable)**

Right of Way in favor of Koch Pipeline Southeast, Inc., dated October 20, 1998, and recorded in the official records of St. Tammany Parish, Louisiana, as Instrument No. 1123131. **(Exception does affect subject property and is plotted on the survey)**

Lease in favor of the Northlake Nature Center, dated October 12, 1999, and recorded in the official records of St. Tammany Parish, Louisiana, as Instrument No. 1175171. **(Exception does affect subject property and is plottable)**

Right of Way in favor Cleco Power LLC, recorded in the official records of St. Tammany Parish, Louisiana, on November 3, 2004, as Instrument No. 1462190. **(Exception does affect subject property and is plotted as shown on the survey)**

Terms and conditions set forth in the Right of Way Agreement in favor of St. Tammany Parish, recorded in the official records of St. Tammany Parish, Louisiana on March 1, 2005, as Instrument No. 1480013. **(Exception does affect subject property and is plotted as shown on the survey)**

Reservation of minerals set forth in the Cash Sale of the property from the State of Louisiana and Department of Health and Hospitals to the Parish of St. Tammany, recorded in the official records of St. Tammany Parish, Louisiana, as Instrument No. 1861096.

Any loss due to any portion of the property being wetland; and all matters set forth on the plat of survey by Kelly J. McHugh & Assoc., Inc., dated June 12, 2012, Map File # 5068, and the survey of the Parcels 1 and 2 by Kelly J. McHugh & Assoc., Inc., dated January 23, 2017.

Exceptions to Title Not Shown on Title Policy:

Pipeline servitude granted by the Parish of St. Tammany to Parkway Pipeline LLC dated May 14, 2013, registered in C.IN. # 1900589, Parish of St. Tammany. (Exception does affect subject property and is plotted on the survey. This exception is not shown on the title policy.)

MISCELLANEOUS EXCEPTIONS TO TITLE

The aforesaid title policy indicates that the title policy only insures the lesser of title and actual measurements on the survey of Kelly J. McHugh & Assoc., Inc., dated June 12, 2012, Map File # 5068, nor does it insure the acreage or square footage as shown thereon. Likewise, the acreage as shown on the survey of Kelly J. McHugh & Assoc., Inc., dated January 23, 2017, is not guaranteed or insured.

This opinion does not guarantee any question arising with reference to Bayou Castine or Cane Bayou along the boundaries of the properties, nor does it guarantee the title to any portion of the properties lying in the bed of Bayou Castine or Cane Bayou nor against the rights of others to the use thereof.

The rights of others to use so much of the insured property as is comprised of portions of street, roads, alleys or rights-of-way on or across the subject property.

The rights of parties in possession and to any unrecorded rental agreements or leases.

MINERALS

This title opinion makes no certification as to the mineral ownership, leases, royalties or other mineral matters affecting the subject property.

RESTRICTIVE COVENANTS

There are no restrictive covenants filed for record that would affect the subject property other than those previously mentioned; however, this title opinion makes no comments or certifications concerning zoning restrictions imposed by the state, parish or city.

TAXES

There appear to be no property taxes due to the Parish of St. Tammany.

CAVEAT

The title opinion rendered herein to the Parish of St. Tammany is neither assignable nor heritable and is rendered solely to the Parish of St. Tammany for its sole use with respect to the subject property. The title opinion is for the use of no other individual, institution or entity.

EXCLUSIONS

This certification does not include any matters which might be revealed by investigation of the following: (a) exercise of governmental zoning authority; (b) unrecorded levies or liens for (1) taxes, (2) public improvements (sewage, paving, etc.), (3) private improvements (laborer, materials, etc.); (c) the proposed route of any servitude for streets, highways, roads, pipelines, utilities or other purposes; or (d) any intrusive descriptions, claims by other parties based upon parallel chains of title, or any other adverse claim not discovered by an examination of the indexes of the Clerk of Court of St. Tammany Parish, Louisiana.

Please feel free to call upon me if you should have any questions concerning the content of this opinion.

Very truly yours,

SELECT TITLE, LLC

Leo J. Palazzo

A large, stylized handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke, is written over the typed name "Leo J. Palazzo".

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

Subordination Letter(s)

ACT OF SUBORDINATION

UNITED STATES OF AMERICA

BY

STATE OF LOUISIANA

NORTHLAKE NATURE CENTER, INC.

IN FAVOR OF

PARISH OF ST. TAMMANY

ST. TAMMANY PARISH
GOVERNMENT

BE IT KNOWN, that on the dates and places hereinafter set forth,

BEFORE US, the undersigned Notaries Public, duly commissioned and qualified in and for the State of Louisiana, and in the presence of the undersigned witnesses hereinafter named and undersigned:

PERSONALLY CAME AND APPEARED:

NORTHLAKE NATURE CENTER, INC. (f/k/a Northlake Museum & Nature Center, Inc.), a Louisiana non-profit corporation, having as its mailing address 423 Mariners Plaza, Mandeville, Louisiana 70448, represented herein by Larry A. Burch, its President, duly authorized (hereinafter "**Northlake**"); and

ST. TAMMANY PARISH GOVERNMENT, a political subdivision of the State of Louisiana and the governing authority of St. Tammany Parish, whose mailing address is P.O. Box 628, Covington, Louisiana 70434, herein appearing by and through Patricia P. Brister, Parish President, duly authorized (hereinafter referred to as "Parish")

who declared that:

Northlake is the tenant in (1) that certain Lease by Louisiana Department of Health and Hospitals (f/k/a Louisiana Department of Health and Human Resources) as landlord and Northlake as tenant dated May 2, 1985, which is recorded in CIN# 581678 of the conveyance records of St. Tammany Parish; and (2) that certain Lease by Louisiana Department of Health and Hospitals as landlord and Northlake as tenant last dated October 12, 1999, which is recorded in CIN# 1175171 of the conveyance records of St. Tammany Parish (collectively, the "**Northlake Leases**").

Since the execution of the Northlake Leases, Parish has acquired the interests of the Louisiana Department of Health and Hospitals in and to the Northlake Leases via acquisition of the fee interests in the underlying property.

Parish further declared that, as of the _____ day of _____, 2017, Parish entered into a Mitigation Banking Instrument for the Cane Bayou Mitigation Bank upon the property described in the attached Exhibit A to retain and/or protect the property's natural state, provide for prescribed burning and remediation work, Mitigation Work Plan, plus other restrictions as contained therein, with said property constituting a portion of the property subject to the aforesaid Northlake Leases, and with such Mitigation Banking Instrument being recorded in CIN# _____ of the conveyance records of St. Tammany Parish (hereinafter, the "MBI")

And the said **Northlake** further declared that it is its desire to subordinate the Northlake Leases in favor of **Parish**, the MBI and associated Mitigation Work Plan, and that for said purposes **Northlake** does hereby consent and agree that the Northlake Leases shall be

subordinate and inferior to the MBI and associated Mitigation Work Plan, upon the property therein described.

Northlake acknowledges this subordination and that the MBI and associated Mitigation Work Plan shall be superior and have priority over the Northlake Leases.

And **Northlake** and **Parish** do now declare that they hereby authorize and direct the Clerk of Court for the Parish of St. Tammany to note upon the records of her office an appropriate reference to this subordination in CIN# 581678, CIN# 1175171, and CIN# _____.

The preference and priority is granted to **Parish**. All other rights and priorities of **Northlake** with regard to the Northlake Leases shall continue to be governed and construed in accordance with the provisions of applicable law.

THUS DONE AND PASSED on the _____ day of _____, 2017, in duplicate originals, in _____, Louisiana, in the presence of the undersigned competent witnesses, who hereunto sign their names with the said appearer and me, Notary, after due reading of the whole.

WITNESSES:
INC.

NORTHLAKE NATURE CENTER,

Print name:

By: _____

Name: Larry A. Burch

Title: President

Print name:

Name: _____

La. Bar/Notary ID No.: _____

My commission expires: _____

NOTARY PUBLIC

THUS DONE AND PASSED on the _____ day of _____, 2017. in duplicate originals, in _____, _____, in the presence of the undersigned competent witnesses, who hereunto sign their names with the said appearer and me, Notary, after due reading of the whole.

WITNESSES:

ST. TAMMANY PARISH
GOVERNMENT

Print name:

By: _____
Patricia P. Brister
Parish President

Print name:

Name: _____
La. Bar/Notary ID No.: _____
My commission expires: _____
NOTARY PUBLIC

EXHIBIT "A"
Legal Description of 203.535 Acres

A certain parcel of ground situated in Sections 37 and 43, Township 8 South, Range 12 East, Greensburg Land District, St. Tammany Parish, Louisiana, and being more fully described as follows:

From the corner common to Sections 17, 42 and 43, T-8-S, R-12-E, run North 24 degrees 08 minutes 33 seconds West a distance of 6285.86 feet to the POINT OF BEGINNING

From the POINT OF BEGINNING, run South 45 degrees 08 minutes 15 seconds West a distance of 3,350.44 feet; thence South 50 degrees 40 minutes 36 seconds West a distance of 529.52 feet; thence North 39 degrees 33 minutes 25 seconds West a distance of 141.99 feet; thence North 57 degrees 06 minutes 30 seconds West a distance of 72.27 feet; thence North 81 degrees 01 minutes 55 seconds West a distance of 103.00 feet; thence South 82 degrees 43 minutes 43 seconds West a distance of 169.14 feet; thence South 65 degrees 17 minutes 39 seconds West a distance of 123.78 feet; thence North 35 degrees 33 minutes 07 seconds West a distance of 30.70 feet; thence North 52 degrees 22 minutes 01 seconds West a distance of 78.89 feet; thence North 54 degrees 10 minutes 36 seconds West a distance of 118.87 feet; thence North 00 degrees 00 minutes 00 seconds East a distance of 67.79 feet; thence North 41 degrees 38 minutes 54 seconds West a distance of 42.97 feet; thence North 79 degrees 25 minutes 55 seconds West a distance of 136.18 feet; thence South 70 degrees 29 minutes 37 seconds West a distance of 149.60 feet; thence South 26 degrees 34 minutes 37 seconds West a distance of 59.84 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 73.14 feet; thence South 40 degrees 00 minutes 06 seconds West a distance of 72.20 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 78.50 feet; thence South 80 degrees 59 minutes 46 seconds West a distance of 148.19 feet; thence South 78 degrees 41 minutes 45 seconds West a distance of 182.02 feet; thence South 70 degrees 15 minutes 46 seconds West a distance of 147.91 feet; thence South 71 degrees 35 minutes 56 seconds West a distance of 200.34 feet; thence South 59 degrees 11 minutes 51 seconds West a distance of 355.35 feet; thence South 49 degrees 44 minutes 06 seconds West a distance of 276.02 feet; thence South 76 degrees 13 minutes 31 seconds West a distance of 97.40 feet; thence South 40 degrees 02 minutes 42 seconds West a distance of 58.26 feet; thence South 00 degrees 44 minutes 01 seconds East a distance of 609.66 feet; thence North 68 degrees 49 minutes 04 seconds West a distance of 501.29 feet; thence North 04 degrees 09 minutes 51 seconds East a distance of 7.65 feet; thence North 51 degrees 34 minutes 07 seconds East a distance of 8.58 feet; thence North 63 degrees 49 minutes 41 seconds East a distance of 28.83 feet; thence North 20 degrees 30 minutes 19 seconds West a distance of 15.86 feet; thence North 05 degrees 44 minutes 44 seconds West a distance of 62.61 feet; thence North 49 degrees 28 minutes 55 seconds East a distance of 30.87 feet; thence North 50 degrees 06 minutes 25 seconds East a distance of 15.74 feet; thence North 12 degrees 37 minutes 32 seconds East a distance of 341.96 feet; thence North 32 degrees 18 minutes 26 seconds East a distance of 24.85 feet; thence North 66 degrees 55 minutes 33 seconds East a distance of 27.60 feet; thence North 49 degrees 16 minutes 36 seconds East a distance of 350.47 feet; thence North 23 degrees 43 minutes 53 seconds East a distance of 31.14 feet; thence North 52 degrees 29 minutes 01 seconds West a distance of 12.59 feet; thence North 00 degrees 41 minutes 38 seconds East a distance of 86.05 feet; thence North 45 degrees 49 minutes 57 seconds West a distance of 8.24 feet; thence North 04 degrees 53 minutes 36 seconds East a distance of 12.08 feet; thence North 65 degrees 07 minutes 50 seconds East a distance of 72.59 feet; thence North 11 degrees 52 minutes 49 seconds East a distance of 50.41 feet; thence North 78 degrees 32 minutes 08 seconds East a distance of 30.30 feet; thence North 38 degrees 22 minutes 30 seconds East a distance of 142.69 feet; thence North 64 degrees 56 minutes 45 seconds East a distance of 149.61 feet; thence South 56 degrees 34 minutes 32 seconds East a distance of 69.39 feet; thence South 70 degrees 02 minutes 01 seconds East a distance of 57.29 feet; thence North 47 degrees 27 minutes 58 seconds East a distance of 199.90 feet; thence North 02 degrees 47 minutes 51 seconds East a distance of 46.97 feet; thence North 04 degrees 37 minutes 41 seconds East a distance of 90.39 feet; thence North 05 degrees 58 minutes 54 seconds East a distance of 56.83 feet; thence North 15 degrees 24 minutes 37 seconds West a distance of 79.82 feet; thence North 58 degrees 18 minutes 25 seconds West a distance of 47.24 feet; thence North 26 degrees 06 minutes 40 seconds West a distance of 34.65 feet; thence North 11 degrees 24 minutes 51 seconds East a distance of 147.77 feet; thence North 51 degrees 50 minutes 18 seconds East a distance of 9.03 feet; thence North 67 degrees 57 minutes 19 seconds East a distance of 30.18 feet; thence North 20 degrees 23 minutes 57 seconds East a distance of 39.46 feet; thence North 10 degrees 40 minutes 04 seconds East a distance of 32.10 feet; thence North 42 degrees 41

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thence North 61 degrees 38 minutes 25 seconds East a distance of 53.45 feet; thence South 50 degrees 10 minutes 02 seconds East a distance of 51.63 feet; thence South 66 degrees 51 minutes 32 seconds East a distance of 34.28 feet; thence South 65 degrees 57 minutes 26 seconds East a distance of 29.18 feet; thence South 87 degrees 22 minutes 15 seconds East a distance of 86.44 feet; thence North 85 degrees 08 minutes 34 seconds East a distance of 132.11 feet; thence North 68 degrees 04 minutes 01 seconds East a distance of 28.34 feet; thence North 37 degrees 46 minutes 28 seconds East a distance of 17.04 feet; thence North 46 degrees 25 minutes 30 seconds East a distance of 126.55 feet; thence North 65 degrees 59 minutes 16 seconds East a distance of 61.80 feet; thence North 45 degrees 59 minutes 26 seconds East a distance of 41.32 feet; thence North 40 degrees 23 minutes 39 seconds East a distance of 12.42 feet; thence North 19 degrees 01 minutes 41 seconds East a distance of 200.31 feet; thence North 54 degrees 35 minutes 21 seconds East a distance of 21.26 feet; thence North 76 degrees 02 minutes 06 seconds East a distance of 51.20 feet; thence South 87 degrees 41 minutes 28 seconds East a distance of 122.67 feet; thence North 81 degrees 10 minutes 44 seconds East a distance of 46.00 feet; thence North 53 degrees 53 minutes 59 seconds East a distance of 47.95 feet; thence North 34 degrees 05 minutes 22 seconds East a distance of 34.35 feet; thence North 82 degrees 18 minutes 58 seconds East a distance of 20.70 feet; thence North 43 degrees 52 minutes 36 seconds East a distance of 123.05 feet; thence North 58 degrees 05 minutes 11 seconds East a distance of 23.79 feet; thence North 39 degrees 46 minutes 13 seconds East a distance of 27.06 feet; thence North 38 degrees 21 minutes 07 seconds East a distance of 44.10 feet; thence North 30 degrees 40 minutes 41 seconds East a distance of 57.92 feet; thence North 53 degrees 03 minutes 43 seconds East a distance of 31.61 feet; thence North 40 degrees 51 minutes 10 seconds East a distance of 57.11 feet; thence North 53 degrees 20 minutes 53 seconds East a distance of 122.16 feet; thence North 48 degrees 38 minutes 57 seconds East a distance of 25.43 feet; thence North 00 degrees 09 minutes 27 seconds West a distance of 24.54 feet; thence North 41 degrees 58 minutes 00 seconds East a distance of 130.89 feet; thence North 34 degrees 50 minutes 07 seconds East a distance of 581.03 feet; thence North 37 degrees 45 minutes 41 seconds East a distance of 47.08 feet; thence North 23 degrees 29 minutes 09 seconds East a distance of 31.13 feet; thence North 33 degrees 40 minutes 44 seconds East a distance of 210.41 feet; thence North 18 degrees 40 minutes 19 seconds East a distance of 33.57 feet; thence North 40 degrees 31 minutes 13 seconds East a distance of 27.17 feet; thence North 42 degrees 25 minutes 35 seconds East a distance of 94.93 feet; thence North 23 degrees 48 minutes 21 seconds East a distance of 17.39 feet; 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thence North 55 degrees 14 minutes 56 seconds East a distance of 254.54 feet; thence South 24 degrees 08 minutes 33 seconds East a distance of 1,261.95 feet to the POINT OF BEGINNING;

Said parcel contains 203.535 acres.

Northlake acknowledges this subordination and that the Conservation Servitude shall be superior and have priority over the Northlake Leases.

And **Northlake** and _____ do now declare that they hereby authorize and direct the Clerk of Court for the Parish of St. Tammany to note upon the records of her office an appropriate reference to this subordination in CIN# 581678, CIN# 1175171, and CIN# _____.

The preference and priority is granted to _____. All other rights and priorities of **Northlake** with regard to the Northlake Leases shall continue to be governed and construed in accordance with the provisions of applicable law.

THUS DONE AND PASSED on the _____ day of _____, 2017, in duplicate originals, in _____, Louisiana, in the presence of the undersigned competent witnesses, who hereunto sign their names with the said appearer and me, Notary, after due reading of the whole.

WITNESSES:
INC.

NORTHLAKE NATURE CENTER,

Print name:

By: _____
Name: Larry A. Burch
Title: President

Print name:

Name: _____
La. Bar/Notary ID No.: _____
My commission expires: _____
NOTARY PUBLIC

THUS DONE AND PASSED on the _____ day of _____, 2017, in duplicate originals, in _____, _____, in the presence of the undersigned competent witnesses, who hereunto sign their names with the said appearer and me, Notary, after due reading of the whole.

WITNESSES:

Print name:

By: _____
Name:
Title:

Print name:

Name: _____
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NOTARY PUBLIC

EXHIBIT "A"
Legal Description of 203.535 Acres

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From the POINT OF BEGINNING, run South 45 degrees 08 minutes 15 seconds West a distance of 3,350.44 feet; thence South 50 degrees 40 minutes 36 seconds West a distance of 529.52 feet; thence North 39 degrees 33 minutes 25 seconds West a distance of 141.99 feet; thence North 57 degrees 06 minutes 30 seconds West a distance of 72.27 feet; thence North 81 degrees 01 minutes 55 seconds West a distance of 103.00 feet; thence South 82 degrees 43 minutes 43 seconds West a distance of 169.14 feet; thence South 65 degrees 17 minutes 39 seconds West a distance of 123.78 feet; thence North 35 degrees 33 minutes 07 seconds West a distance of 30.70 feet; thence North 52 degrees 22 minutes 01 seconds West a distance of 78.89 feet; thence North 54 degrees 10 minutes 36 seconds West a distance of 118.87 feet; thence North 00 degrees 00 minutes 00 seconds East a distance of 67.79 feet; thence North 41 degrees 38 minutes 54 seconds West a distance of 42.97 feet; thence North 79 degrees 25 minutes 55 seconds West a distance of 136.18 feet; thence South 70 degrees 29 minutes 37 seconds West a distance of 149.60 feet; thence South 26 degrees 34 minutes 37 seconds West a distance of 59.84 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 73.14 feet; thence South 40 degrees 00 minutes 06 seconds West a distance of 72.20 feet; thence South 00 degrees 00 minutes 00 seconds East a distance of 78.50 feet; thence South 80 degrees 59 minutes 46 seconds West a distance of 148.19 feet; thence South 78 degrees 41 minutes 45 seconds West a distance of 182.02 feet; thence South 70 degrees 15 minutes 46 seconds West a distance of 147.91 feet; thence South 71 degrees 35 minutes 56 seconds West a distance of 200.34 feet; thence South 59 degrees 11 minutes 51 seconds West a distance of 355.35 feet; thence South 49 degrees 44 minutes 06 seconds West a distance of 276.02 feet; thence South 76 degrees 13 minutes 31 seconds West a distance of 97.40 feet; thence South 40 degrees 02 minutes 42 seconds West a distance of 58.26 feet; thence South 00 degrees 44 minutes 01 seconds East a distance of 609.66 feet; thence North 68 degrees 49 minutes 04 seconds West a distance of 501.29 feet; thence North 04 degrees 09 minutes 51 seconds East a distance of 7.65 feet; thence North 51 degrees 34 minutes 07 seconds East a distance of 8.58 feet; thence North 63 degrees 49 minutes 41 seconds East a distance of 28.83 feet; thence North 20 degrees 30 minutes 19 seconds West a distance of 15.86 feet; thence North 05 degrees 44 minutes 44 seconds West a distance of 62.61 feet; thence North 49 degrees 28 minutes 55 seconds East a distance of 30.87 feet; thence North 50 degrees 06 minutes 25 seconds East a distance of 15.74 feet; thence North 12 degrees 37 minutes 32 seconds East a distance of 341.96 feet; thence North 32 degrees 18 minutes 26 seconds East a distance of 24.85 feet; thence North 66 degrees 55 minutes 33 seconds East a distance of 27.60 feet; thence North 49 degrees 16 minutes 36 seconds East a distance of 350.47 feet; thence North 23 degrees 43 minutes 53 seconds East a distance of 31.14 feet; thence North 52 degrees 29 minutes 01 seconds West a distance of 12.59 feet; thence North 00 degrees 41 minutes 38 seconds East a distance of 86.05 feet; thence North 45 degrees 49 minutes 57 seconds West a distance of 8.24 feet; thence North 04 degrees 53 minutes 36 seconds East a distance of 12.08 feet; thence North 65 degrees 07 minutes 50 seconds East a distance of 72.59 feet; thence North 11 degrees 52 minutes 49 seconds East a distance of 50.41 feet; thence North 78 degrees 32 minutes 08 seconds East a distance of 30.30 feet; thence North 38 degrees 22 minutes 30 seconds East a distance of 142.69 feet; thence North 64 degrees 56 minutes 45 seconds East a distance of 149.61 feet; thence South 56 degrees 34 minutes 32 seconds East a distance of 69.39 feet; thence South 70 degrees 02 minutes 01 seconds East a distance of 57.29 feet; thence North 47 degrees 27 minutes 58 seconds East a distance of 199.90 feet; thence North 02 degrees 47 minutes 51 seconds East a distance of 46.97 feet; thence North 04 degrees 37 minutes 41 seconds East a distance of 90.39 feet; thence North 05 degrees 58 minutes 54 seconds East a distance of 56.83 feet; thence North 15 degrees 24 minutes 37 seconds West a distance of 79.82 feet; thence North 58 degrees 18 minutes 25 seconds West a distance of 47.24 feet; thence North 26 degrees 06 minutes 40 seconds West a distance of 34.65 feet; thence North 11 degrees 24 minutes 51 seconds East a distance of 147.77 feet; thence North 51 degrees 50 minutes 18 seconds East a distance of 9.03 feet; thence North 67 degrees 57 minutes 19 seconds East a distance of 30.18 feet; thence North 20 degrees 23 minutes 57 seconds East a distance of 39.46 feet; thence North 10 degrees 40 minutes 04 seconds East a distance of 32.10 feet; thence North 42 degrees 41

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thence North 55 degrees 14 minutes 56 seconds East a distance of 254.54 feet; thence South 24 degrees 08 minutes 33 seconds East a distance of 1,261.95 feet to the POINT OF BEGINNING;

Said parcel contains 203.535 acres.

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

ATTACHMENT MBI – C
MITIGATION WORK PLAN

ATTACHMENT C: MITIGATION WORK PLAN
 FOR PINE FLATWOODS/SAVANNA HABITAT
 CANE BAYOU MITIGATION BANK
 MVN 2009-02402

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Attachments:

Attachment MWP-A Figures /Documents and Drawings/Tables

Attachment MWP-B Fire Management Plan

Attachment MWP-C Cost Analysis Reports and Acreage Tables

Attachment MWP-D Credit Determination Assessment Method(s)

Attachment MWP-E Herbaceous Indicators of High Quality Pine Savannas in Louisiana

MITIGATION WORK PLAN FOR CANE BAYOU MITIGATION BANK

I. Bank Property Location

The Cane Bayou Mitigation Bank (CBMB) is located in St. Tammany Parish, Louisiana (Attachment MBI – A, Figures 1 - 4). The center point of the bank property is located at latitude 30.349497 N, longitude 90.007864 W.

Driving directions to the site are as follows: From North Causeway Blvd. in Mandeville, LA, exit right on the US 190/Monroe St. exit. At the intersection stay straight and get on East Causeway Approach for 1.3 miles. Turn right on US Hwy 190 and go for 3.7 miles. Turn left on Pelican Drive to reach the center of the property.

II. Objective

A. *Aquatic Resource Type and Functions to be Restored/Enhanced /Preserved*

This Bank will provide 684.9 acres of enhanced pine flatwoods/savanna (longleaf pine savanna; PF/S) habitat.

The primary goal of the CBMB is to restore the degraded and highly altered timberland comprised nearly exclusively of off-site timber species, to a functioning longleaf pine savanna wetland system similar to what was present on the area in pre-settlement times.

The following description of wet longleaf pine savanna to be restored at CBMB is derived from The Natural Communities of Louisiana (LDWF 2009). Pine savannas are floristically rich, herb-dominated wetlands that are naturally sparsely stocked with *Pinus palustris* (longleaf pine). They historically dominated the Gulf Coastal Plain flatwood regions of southeast and southwest Louisiana. The term "savanna" is classically used to describe expansive herb-dominated areas with scattered trees. Wet savannas occupy the poorly drained and seasonally saturated/flooded depressional areas and low flats, while the non-wetland flatwoods occupy the better drained slight rises, low ridges and "pimple mounds" (only southwest LA). Pine savannas are subject to a highly fluctuating water table, from surface saturation/shallow flooding in late fall/winter/early spring to growing-season droughtiness. Soils are hydric, very strongly acidic, nutrient poor, fine sandy loams and silt loams, low in organic matter. The soils may be underlain by an impeding layer so that they are only slowly permeable and water runs off the surface gradually. Common woody species include *P. palustris* (longleaf pine, usually predominant tree species), *Pinus elliotii* (slash pine, southeastern Louisiana), *Magnolia virginiana* (sweet bay), *Nyssa sylvatica* (black gum), *Quercus virginiana* (live oak), *Q. marilandica* (blackjack oak), *Q. laurifolia* (laurel oak), *Cyrilla racemiflora* (swamp cyrilla), *Morella* spp. (wax myrtles), *Hypericum* spp. (St. John's worts), and *Styrax americana* (littleleaf snowbell). *Taxodium ascendens* (pondcypress,

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southeastern Louisiana) may occur but is usually restricted to slightly lower areas within the site. Although past logging has altered the arboreal characteristics of most occurrences of the community (primarily by reducing coverage of longleaf and slash pine), the herbaceous complement in high quality remnants is thought to differ little from that present prior to timbering and stumping activities. Herbaceous vegetation of pine savannas is very diverse, dominated by graminoids (grasses and sedges). Graminoids present include *Andropogon* spp. (broomsedges), *Schizachyrium scoparium* and *S. tenerum* (little and slender bluestem), *Panicum* spp. (panic grasses), *Aristida* spp. (three-awn grasses), *Ctenium aromaticum* (toothache grass), *Muhlenbergia capillaris* (hairawn muhly), *Erianthus* spp. (plume-grasses), *Coelorachis* spp. (jointgrasses), *Rhynchospora* spp. (beak-rushes), *Xyris* spp. (yellow-eyed grasses), *Fuirena* spp. (umbrella grasses), *Scleria* spp. (nut-rushes), *Dichromena latifolia* (giant white top sedge), *Eriocaulon* spp. (pipeworts), *Lachnocaulon* spp. (bog buttons), and *Fimbristylis* spp. (fimbry-sedge). Some forbs common in the community include *Sarracenia* spp. (pitcher plants), *Agalinis* spp. (gerardias), *Lobelia* spp. (lobelias), *Rhexia* spp. (meadow beauties), *Eryngium integrifolium* (bog thistle), *Oxypolis filiformis* (narrow-leaved hog-fennel), *Polygala* spp. (milkworts), *Liatris* spp. (blazing-stars), *Sabatia* spp. (rose-gentians), *Drosera* spp. (sundews), *Pinguicula* spp. (butterworts), *Utricularia* spp. (bladderworts), and *Platanthera* spp. (fringed-orchids). Various additional species belonging to the lily family (Liliaceae), sunflower family (Asteraceae), and orchid family (Orchidaceae) are prominent. Lycopodium spp. (club-mosses) and sphagnum moss are often abundant. Fire frequency is a major factor controlling species occurrence and community structure. Without frequent fire, shrubs, and eventually trees, especially hardwoods, gain dominance and eliminate most of the herbaceous flora.

Attachment MWP – A, Figure 5 shows current conditions of CBMB and the two sections in which the property will be restored. Section 1 will be the first area to undergo restoration management which will begin immediately upon signing the MBI. Efforts will be made to complete restoration and reach long-term success criteria within 10 - 15 years. Initiation of Section 2 is anticipated by Year 3 when construction work of Section 1 is complete and establishment work is underway. This Mitigation Work Plan (MWP) focuses primarily on Section 1, but includes much information pertinent to Section 2 as well.

This project will achieve the following wetland functions as listed below and shown in Tables 1 – 3 below for Sections 1, 2, and total bank respectively.

For Section 1:

- enhance 394.7 acres of degraded and highly altered wet pine flatwood/savanna and associated wetland communities
- restore 97 acres of pine flatwood uplands within a 200 - 500 foot buffer adjacent to wet savanna, cypress – tupelo swamp, and drainages
- preserve 15 acres of cypress – tupelo swamp as buffer
- conserve remaining upland and wetland habitat to serve as additional non-mitigation buffer

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For Section 2:

- enhance 290.2 acres of degraded and highly altered wet pine flatwood/savanna and associated wetland communities
- restore 143.7 acres of pine flatwood uplands within a 200 – 500 foot buffer adjacent to wet savanna areas and drainages

TABLE 1. Proposed Restoration Types – CBMB Section 1
 Section 1 total acreage= 707.9 acres (credit + non-credit acreage)

Habitat Type	Restoration Type	Total Credit Acreage	Non-credit Acreage	Buffer Acreage
Pine savanna	Enhancement	255.4		
Pine savanna (powerline)	Enhancement	10.9		
Pine savanna	Enhancement	128.4		
Cypress-tupelo/scrub-shrub swamp	Buffer			15
Longleaf pine flatwood uplands	Buffer			97
Cypress-tupelo/scrub-shrub swamp	Non-mitigation		31.9	
Loblolly pine- hardwood forest	Non-mitigation		133	
Pine flatwoods uplands	Non-mitigation		21.3	
Waters of the U.S.	Non-mitigation		4.4	
Ponds	Non-mitigation		0.8	
Log Cabin Rd.	Non-Mitigation		3.1	
Elevated Woods Rd.	Non-Mitigation		2.1	
Improved Firelines	Non-Mitigation		1.1	
Existing Trails	Non-Mitigation		3.5	
Totals		394.7	201.2	112

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TABLE 2. Proposed Restoration Types – CBMB Section 2
 Section 2 total acreage= 457.6 acres (credit + non-credit acreage)

Habitat Type	Restoration Type	Total Credit Acreage	Non-credit Acreage	Buffer Acreage
Pine savanna	Enhancement	283.6		
Pine Savanna (powerline)	Enhancement	6.6		
Longleaf pine flatwood uplands	Buffer			143.7
Loblolly pine- hardwood forest	Non-mitigation		16.7	
Waters of the U.S.	Non-mitigation		4.7	
Log Cabin Rd.	Non-mitigation		1.6	
Improved Firelines	Non-mitigation		0.7	
Totals		290.2	23.7	143.7

TABLE 3. Proposed Restoration Types – Total CBMB Bank
 Total bank acreage= 1165.5 acres

Habitat Type	Restoration Type	Total Credit Acreage	Non-credit Acreage	Buffer Acreage
Pine savanna	Enhancement	255.4		
Pine savanna (powerline)	Enhancement	10.9		
Pine savanna	Enhancement	412		
Pine savanna (powerline)	Enhancement	6.6		
Cypress-tupelo/scrub-shrub swamp	Buffer			15
Longleaf pine flatwood uplands	Buffer			240.7
Cypress-tupelo/scrub-shrub swamp	Non-mitigation		31.9	
Loblolly pine- hardwood forest	Non-mitigation		149.7	
Pine flatwoods uplands	Non-mitigation		21.3	
Waters of the U.S.	Non-mitigation		9.1	

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Ponds	Non-mitigation		0.8	
Log Cabin Rd.	Non-mitigation		4.7	
Elevated Woods Rd.	Non-mitigation		2.1	
Improved Firelines	Non-mitigation		1.8	
Existing Trails	Non-mitigation		3.5	
Totals		684.9	224.9	255.7

The current Jurisdictional Determination can be seen in Attachment MWP-A – Documents and Drawings. In addition, see Attachment MWP-C, Table 6 for acreage calculation documentation of non-restorable areas, which total 12.1 acres.

B. Watershed Contributions

By removing the property to be included in CBMB Bank from industrial-type forest management, restoring natural composition and structure of indigenous habitats, and reintroducing or improving natural processes such as prescribed fire and hydrology, STP anticipates enhancement of several aquatic functions on this site. These include sediment reduction in wetlands and streams, prolonged hydro-periods, water quality improvement, wildlife diversity and habitat improvement including that for the endangered Red-cockaded Woodpecker (RCW; *Picoides borealis*), as well as habitat connectivity and sustainability improvement.

Benefits of the proposed wetland restoration include water quality improvement through water filtration and sediment reduction in wetlands and streams, prolonged hydro-periods and floodwater retention, and increased biological productivity and diversity. Because CBMB includes a significant portion of the Cane Bayou watershed, the proposed work will enhance water quality and quantity within this designated Louisiana Natural and Scenic Stream. Cane Bayou is currently designated as impaired due to total dissolved solids, sulfates and turbidity; thus, the proposed actions should help with attainment goals.

Improved water quality will also benefit the Lake Pontchartrain Estuary which is a priority conservation area identified by The Nature Conservancy, the Lake Pontchartrain Basin Foundation, and many other entities (The Nature Conservancy 2004). The Lake Pontchartrain Conservation Area is considered a conservation priority because 1) it is one of the largest estuaries in the nation and retains a relatively intact interaction between freshwater rivers to the north and the Gulf of Mexico to the southeast; 2) it supports a significant commercial and recreational fisheries resource, including oyster reefs, which provide important habitat for countless marine species; 3) it supports rare sea grass communities, which are critically important for many aquatic species; 4) it provides important habitat for a variety of rare or declining species, such as Gulf sturgeon and Bald Eagle; 5)

the forested wetlands are among the largest contiguous blocks of cypress-tupelo in the ecoregion; and 6) although relatively limited in aerial extent, the marshes along the north shore of Lake Pontchartrain are largely in excellent condition.

An overarching objective is to restore open longleaf pine wetland composition and structure important for an extraordinary number of associated plants (many rare and endemic or near endemic to this habitat type) and resident and migratory (e.g., migratory birds) wildlife species dependent on open pineland conditions. Many species indigenous to longleaf pine savanna systems, including an array of amphibians and grassland and open-canopy bird species, are species of conservation concern today (U.S. Fish and Wildlife Service 2008). The endangered RCW may be the first to benefit, as an active cluster exists on the adjacent hospital grounds and as well as the nearby Big Branch National Wildlife Refuge (NWR). Restoration of CBMB will provide foraging and potential nesting habitat.

This project will expand the area dedicated to conservation in the immediate area (herein termed the "Northshore East Conservation Area") thereby creating a larger block of close-proximity conservation lands approaching approximately 24,000 acres in size (including CBMB). Such expansion will help minimize habitat fragmentation, maximize smoke sheds and the ability to conduct prescribed burns, foster connections (i.e., corridors) between extant habitat conservation areas, and prepare for a future surrounding land-use of higher density suburban development.

III. Site Selection

As a result of this project, CBMB will expand the area already dedicated to conservation in the immediate area (Northshore East Conservation Area) thereby creating a large block of close-proximity conservation lands approaching approximately 24,000 acres in size (including CBMB) to help minimize habitat fragmentation, maximize smoke sheds and the ability to conduct prescribed burns, foster connections (i.e., corridors) between extant habitat conservation areas, and prepare for a future surrounding land-use of higher density suburban development.

Restoration and management of pine savanna will benefit numerous rare wetland plant species tracked by the Louisiana Natural Heritage Program. Restoration of CBMB could also provide additional habitat for state and federally-rare species of plants and animals that require upland and wetland pine savanna and several species of grassland birds, which are of conservation concern.

Technical feasibility of CBMB is achievable with careful design and planning as included herein. Over the past century, the property has been significantly altered from its original, natural state. The original longleaf forest that once dominated the site was cleared for commercial pine plantations and fire has mostly been excluded. The work of The Nature Conservancy and others has shown that restoration of lands in this condition is possible. Required management activities will consist of targeted hydrologic improvements, timber and brush management, invasive species control, and implementation of an aggressive

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prescribed fire program, all management activities that have been conducted at the adjacent Northlake Nature Center (NNC), Fontainebleau State Park and/or nearby Big Branch NWR, and thus are compatible with the area.

The most challenging aspect of the proposed restoration and management may be maintaining the ability to use prescribed fire in an increasingly urbanized landscape and the increasingly difficult challenge of smoke management. Several steps are planned by the Parish to mitigate problems with smoke management including fire units that can be burned in a relatively short period of time and detailed fire prescriptions (burn management plans) that take into account surrounding conditions. In addition, STP plans to employ a public information program that will alert new development in the area that occasional smoke should be expected. The preferred route of a proposed new roadway (Attachment MWP – A, Figure – 7), called the Mandeville By-pass, has been located to avoid the bank. In addition, STP will have the ability to close the roadway, if needed to accommodate prescribed burning on CBMB (via LSA R.S. 32:5(A) and LSA R.S. 48:346). The Parish will consult with The Nature Conservancy, US Fish and Wildlife Service (FWS), Office of State Parks and others to develop a safe and effective prescribed fire program for CBMB.

Because there are known active RCW cluster sites within a mile of CBMB, any proposed restoration and management of the bank property will require consultation with federal and state agencies responsible for RCW recovery. Forest restoration will follow Louisiana Department of Wildlife and Fisheries (LDWF) and FWS regulations near RCW cavity trees. A meeting has been held with LDWF and their recommendations, including those of the RCW Recovery Plan (USFWS 2003; specifically Appendix 5- Private Lands Guidelines) and provided guidance will be followed in the management of CBMB. The Sponsor will provide financial assurances to provide for long-term fire management of the site.

IV. Site Protection instrument

(See Section X. Long-Term Protection and Maintenance, Subsection A. “Conservation Servitude” of this MBI.)

V. Baseline information

This section contains both the historical and current ecological and physical information about the Bank Site.

A. Land Use

1. Historical Land Use

Early European settlements in the Parish were initially found along streams and the lakefront. Some sawmills were located in these areas where streams facilitated the floating

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of logs to mills. Broad-scale land-use in the region initially was primarily free range cattle and sheep. Later, development spread throughout as the Northshore region became known as the Ozone Belt that provided clean air and natural springs for health and vacation destinations for New Orleanians and others. Large-scale harvest of virgin timber began late in the 19th Century following invention of the steam engine and development of railroads. However, because of the proximity of CBMB to Lake Pontchartrain and nearby bayous, it is likely this area was logged of most of its merchantable virgin longleaf pine timber prior to the middle 1880's (See Sargent 1884, map page 536). From aerial photographs, CBMB property appears to have been managed primarily for timber production and wildlife habitat in relatively recent times (Attachment MBI - A, Figure 3 and Attachment MWP - A, Figures 6a, 6b). The property has been in State of Louisiana ownership since approximately 1938 when a large tract was purchased from the Great Southern Lumber Company. Part of this property became Fontainebleau State Park and another portion became the St. Tammany Wildlife Refuge operated by LDWF. The remaining portions were owned by the Louisiana Department of Health and Human Resources (now the Department of Health and Hospitals) who commercially managed the timber on much of the property. Some old-growth longleaf pines are still present on the eastern CBMB tract and on adjacent tracts of the Northlake Behavioral Health System grounds and NNC. Some of these trees outside of the bank boundary support an active colony of RCW.

In 1985, some of the state land mentioned above was leased from the Department of Health and Hospitals in separate long-term leases to the NNC which includes the western parcel of CBMB, and to St. Tammany Recreation District 1, which separates the CBMB parcels, dividing Section 1. The NNC lease has a stated purpose "for outdoor recreation activities and educational programs...for managing and enhancing the forest and the value of the trees by reforestation and other means..." and includes the west portion the proposed CBMB. NNC is a forested nature preserve used for environmental education, hiking and other nature-related activities. It has walking and biking nature trails, boardwalks and bridges designed for minimal impact to the ecology of the site. No structures or improved trails are present on the portion within CBMB. Pelican Park, operated by St. Tammany Recreation District 1, is a recreational and meeting facility comprised primarily of athletic fields and gyms, a dog park, large meeting facility, parking lots, paved roads and other structures. North and west of CBMB is private forestland, and to the south are Fontainebleau State Park, and the Northlake Behavioral Health System (Attachment MWP - A, Figure 7).

North and west of CBMB is private forestland, and to the south are Fontainebleau State Park, Pelican Park future expansion land, and the Northlake Behavioral Health System (formerly known as the Southeast Louisiana Hospital). This facility was formerly owned by the Louisiana Department of Health and Hospitals and was recently acquired by the Parish for similar use (Attachment MWP - A, Figure 7).

The Sponsor purchased the property that includes CBMB in 2012 subject to NNC and Pelican Park leases which expire in 2035. The Northlake Behavioral Health System (former Southeast Louisiana State Hospital) was developed approximately 60 years ago south of the eastern tract, and is now owned by the Sponsor as well. In the 1970's, just north of the

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central portion of CBMB, a landfill for St. Tammany Parish and the surrounding area was opened as an unpermitted open dump (Gulf Engineers and Consultants, GEC, 2011). The landfill was later closed in 1994. Southeast of the landfill are 2 filled-in state hospital oxidation ponds that have been replaced by a new wastewater treatment facility just north of Monteleone Junior High School. A septic treatment right-of-way still exists leading to Cane Bayou on the southeast boundary of CBMB (GEC 2011; Attachment MWP - A , Figure 7).

Population growth in St. Tammany Parish has risen steadily since the construction of the Causeway across Lake Pontchartrain in 1956. Properties southwest of the western tract, and southeast of the eastern tract of CBMB are now subdivisions (Cane Bayou Estates/Laurel Oaks, and Bayou Acres/Hidden Pines respectively, among others). The city limits of Mandeville are now immediately west of Bayou Castine, but there is substantial undeveloped land to the north, east and south. Although the area is growing, much of the surrounding land to the north and south is undeveloped. Private timberland lies to the north, and Fontainebleau State Park is adjacent on the south. The land for the park was purchased in 1938 and opened in 1943 (R. Scott, LA State Parks Interpretive Ranger, pers. commun., 2014). Additionally, Big Branch National Wildlife Refuge, owned and operated by the FWS and lying adjacent to Fontainebleau, was established in 1994. Altogether, a total of over 20,000 acres of public conservation lands are contiguous with CBMB (Attachment MBI – A, Figure 1). Public lands adjacent to CBMB totaling over 20,000 acres, comprise a large conservation area herein referred to as the Northshore East Conservation Area (NECA) that will complement and benefit from restoration efforts on the Cane Bayou Mitigation Bank.

2. Current Land Use

Recent land use on CBMB involved continued commercial timber management by the LA Division of Administration, Office of State Lands, until recent acquisition by the Sponsor. Though managed for periodic timber harvest, none of the area was planted into plantations. A large southern pine-bark beetle outbreak occurred in the area in the mid-1990s that killed mature pine timber on much of the surrounding areas and on portions of CBMB. Dead timber was salvage-logged from most of the bug-killed zones shortly after the event (Attachment MWP - A , Figures 6a, 6b). Prescribed fire was not conducted by the State on CBMB and in fact, fire was actively suppressed. However, wildfires have occurred in the area over the years, such as the wildfire in 2001 which burned portions of CBMB, killing some timber. St. Tammany Parish Government acquired the state tract including CBMB, NNC and Pelican Park from the Department of Health and Hospitals in 2012 and has recently acquired the adjacent Northlake Behavioral Health System.

B. Soils

According to the most recent soil survey of St. Tammany Parish (USDA 1990), soils present on CBMB that support wetlands are shown in Attachment MWP - A , Figure 8 and include:

- Myatt fine sandy loam (hydric) and Myatt fine sandy loam, frequently flooded (hydric)
- Stough fine sandy loam (officially designated non-hydric but known to support wetlands in many locations in St. Tammany Parish where it is mapped)

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- Brimstone-Guyton silt loams complex (Present only in Section 1)
- Guyton silt loam
- Ouachita-Bibb soils, frequently flooded
- Arat silty clay loam (Present only in Section 1)

The following descriptions were taken in October 2015 from the USDA-NRCS Official Soil Series Descriptions on the internet (web link: <https://soilseries.sc.egov.usda.gov/osdname.asp>)

Myatt Series

(Web link: https://soilseries.sc.egov.usda.gov/OSD_Docs/M/MYATT.html)

The Myatt series consists of very deep, poorly drained, moderately slowly permeable soils on stream terraces and upland flats of the Southern Coastal Plain (MLRA 133A). They formed in regolith consists of medium to moderately fine textured marine or fluvatile sediments. They are saturated during the winter and spring. Near the type location, the mean annual temperature is about 62 degrees F., and the mean annual precipitation is about 53 inches. Slopes range from 0 to 2 percent.

Solum thickness ranges from 40 to 60 inches. Reaction ranges from very strongly acid to moderately acid in the upper part of the solum and from extremely acid to strongly acid in the lower part of the solum and the underlying material. Coarse fragments range from 0 to 3 percent, by volume, in the solum and from 5 to 25 percent in the underlying material. The control section has 18 to 35 percent clay and 20 to 45 percent silt.

TAXONOMIC CLASS: Fine-loamy, siliceous, active, thermic Typic Endoaquults

DRAINAGE AND PERMEABILITY: Poorly drained; very slow to slow runoff; moderately slow to moderate permeability.

Stough Series

(Web link: https://soilseries.sc.egov.usda.gov/OSD_Docs/S/STOUGH.html)

The Stough series consists of very deep, somewhat poorly drained, moderately slowly permeable soils are on terraces and uplands of the Southern Coastal Plain (MLRA 133A). They formed in loamy sediments of fluvial or marine origin. Near the type location, the average annual temperature is about 66 degrees F., and the average annual rainfall is about 56 inches. Slopes range from 0 to 5 percent.

Solum thickness is more than 60 inches. The control section has 8 to 18 percent clay and more than 20 percent silt. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

TAXONOMIC CLASS: Coarse-loamy, siliceous, semiactive, thermic Fraguaquic Paleudults

DRAINAGE AND PERMEABILITY: Somewhat poorly drained; slow runoff; moderately slow permeability.

Brimstone Series

(Web link: https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BRIMSTONE.html)

The Brimstone series consists of deep, poorly drained, slowly permeable soils that formed in loamy fluviomarine deposits that are high in exchangeable sodium of late Pleistocene age. These soils are on broad flats or depressions. Slopes ranges from 0 to 1 percent. Mean

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annual precipitation is 1600 mm (63 in), and mean annual air temperature is about 20 degrees C (68 degrees F).

Solum thickness: 102 to 254 cm (40 to 100 in)

Exchangeable sodium percentage: 15 to 30 within the upper 15 cm (6 in) of the natric horizon or within 41 cm (16 in) of the soil surface. Exchangeable sodium saturation decreases with depth and it is typically less than 15 percent below depths of 132 cm (52 in). Reaction ranges from very strongly acid to moderately acid in the upper part of the solum and from neutral to moderately alkaline in the lower part of the solum and the underlying material.

TAXONOMIC CLASS: Fine-silty, siliceous, superactive, thermic Glossic Natraqualfs

DRAINAGE AND PERMEABILITY: Poorly drained; runoff is negligible; permeability is slow. A seasonal high water table is at depths of 0 to 46 cm (0 to 1.5 ft) below the surface from December through April.

Guyton Series

(Web link: https://soilseries.sc.egov.usda.gov/OSD_Docs/G/GUYTON.html)

The Guyton series consists of very deep, poorly drained and very poorly drained, slowly permeable soils that formed in thick loamy sediments. These soils are on Coastal Plain local stream flood plains and in depressional areas on late Pleistocene age terraces. Slopes range from 0 to 1 percent.

Solum thickness ranges from 127 to about 203 cm (50 to about 80 in). Sand content which is dominantly very fine sand ranges from 10 to 40 percent in the control section.

Exchangeable sodium ranges from less than 5 percent to 40 percent in the lower part of the solum.

Reaction typically ranges from extremely to strongly acid throughout.

TAXONOMIC CLASS: Fine-silty, siliceous, active, thermic Typic Glossaqualfs

DRAINAGE AND PERMEABILITY: Guyton soils are poorly drained, except where ponded. Where runoff is ponded, drainage is very poor. Runoff is slow to ponded. Permeability is slow. A seasonal high water table is at 0 to 46 cm (0 to 1.5 ft) below the surface from December through May, except where ponded. Where ponded, it is from 30 cm (1 foot) above the surface to 15 cm (0.5 foot) below the surface most of the time. In places, the soils are subject to rare, occasional, or frequent flooding.

Ouachita and Bibb (mapped as a complex)

(Web link: https://soilseries.sc.egov.usda.gov/OSD_Docs/O/OUACHITA.html)

(Web link: https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BIBB.html)

Ouachita:

The Ouachita series consists of deep, well drained, moderately slowly permeable soils that formed in loamy alluvium. These level to nearly level soils are on flood plains and natural levees along streams in the Western Coastal Plains. Slopes range from 0 to 3 percent. Mean annual temperature is about 17 degrees C (63 degrees F) and the mean annual precipitation is about 1270 mm (50 in).

Solum thickness ranges from 102 to 203 cm (40 to more than 80 in). Reaction ranges from very strongly acid to moderately acid in the A and is very strongly acid or strongly acid in the Bw and C horizons.

TAXONOMIC CLASS: Fine-silty, siliceous, active, thermic Fluventic Dystrudepts

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DRAINAGE AND PERMEABILITY: Well drained; slow runoff; moderately slow internal drainage; moderately slow permeability. Most areas of these soils commonly flood a few times each year, usually during winter and early spring.

Bibb:

The Bibb series consists of very deep, poorly drained, moderately permeable soils on flood plains of streams in the Southern Coastal Plain (133A) Major Land Resource Area. They formed in stratified loamy and sandy alluvium that are commonly and frequently flooded and water runs off the surface very slowly. Near the type location, the average annual air temperature is about 65 degrees F. and the average annual precipitation is about 54 inches. Slopes range from 0 to 2 percent.

Reaction ranges from extremely acid to strongly acid throughout. Content of mica flakes ranges from none to common. Content of rounded gravel typically ranges from 0 to 10 percent throughout, but may range to 50 percent in thin strata below a depth of 40 inches. Buried soil horizons, present in many pedons, have the same range in color and texture as the Ag horizon.

TAXONOMIC CLASS: Coarse-loamy, siliceous, active, acid, thermic Typic Fluvaquents

DRAINAGE AND PERMEABILITY: Poorly drained; very slow runoff; moderate permeability.

The water table is within 8 inches of the surface from 6 to 11 months each year.

Arat Series

(Web link: https://soilseries.sc.egov.usda.gov/OSD_Docs/A/ARAT.html)

The Arat series consists of very deep, very poorly drained, slowly permeable soils. They formed in semifluid loamy sediments that have never air dried and consolidated. These soils are on low broad ponded back swamp areas along major streams. Slope ranges from 0 to 0.5 percent. They are at elevations less than 3 feet and are nearly continuously flooded. The climate is warm and humid. The mean air temperature is 68 degrees F., and the mean annual rainfall is about 53 inches near the type location.

TAXONOMIC CLASS: Fine-silty, siliceous, super active, nonacid, thermic Typic Hydraquents

DRAINAGE AND PERMEABILITY: Very poorly drained; ponded; permeability is slow. The water level fluctuates between 0 to 3 feet above the soil surface. These soils have never air-dried and consolidated; consequently they remain semifluid. They are nearly continuously flooded with up to 3 feet of water

Of the soils shown to be present on CBMB, pine savanna wetlands occur primarily on soils mapped as Myatt fine sandy loam (0 – 1% slopes), Brimstone-Guyton complex (present only in Section 1), and Stough soils. Stough soils are officially categorized non-hydric but areas mapped as having this soil types in St. Tammany Parish are commonly recognized by experts to support jurisdictional wetlands in many places in the local region (e.g., personal communication, Dr. John Bruza, retired wetland scientist, CEMVN). This is also supported by the wetland delineation at CBMB.

A very narrow band of small stream floodplain forest is present along Cane Bayou and soils there are mapped as Ouachita-Bibb complex. Similarly, a narrow band of floodplain forest is present along Castine Bayou and a feeder stream, and soils there are mapped as Guyton silt loam and Myatt fine sandy loam – frequently flooded.

A limited amount of cypress-tupelo swamp/scrub-shrub wetland is present along Bayou Castine (in Section 1) and soils in this area are mapped as Arat silty clay loam.

Non-wet uplands on CBMB are primarily mapped as occurring on Prentiss fine sandy loam, Latonia fine sandy loam, and Stough soils (non-wetland phase) (see Attachment MWP - A, Figure 8).

Soils at CBMB have been influenced by the local topography, which is characterized by broad flats with included small streams and bayous. Past land use history, primarily timber growing and harvesting, have had minimal impact on the soils of the area.

C. Hydrology

1. Historical Hydrology and Drainage Patterns

The hydrology of CBMB historically and currently is largely driven by direct precipitation and sheet-flow from heavy rain events, primarily in the winter and spring. The relatively flat terrain, poorly-drained soils, and high water tables in the southern part of the Parish including CBMB historically supported much wetland vegetation, primarily wet longleaf pine savannas and associated habitats. The historic wet longleaf pine savannas on the tract occurred on the flats, primarily on Myatt fine sandy loam (0 – 1% slopes) and Brimstone-Guyton complex soils, and soils mapped as Stough.

The historic structure of longleaf pine savannas was that of an open to very open woodland with scattered pine trees and minimal brush cover. Evapotranspiration (ET) rates were relatively very low compared to timberland commonly seen today that is heavily stocked with shrubs and trees other than longleaf pine. Low ET rates were a significant factor driving wetland hydrology in the historic pine flats.

The site historically has been drained by two tidally-influenced perennial streams: Cane Bayou on the east, and Bayou Castine on the west (Attachment MBI – A, Figure 2). Cane Bayou and Bayou Castine are approximately 6 miles and 5.7 miles long, respectively, and drain a watershed totaling about 18,493 acres (Attachment MBI – A, Figure 4). Both bayous meander southerly from CBMB for 2 to 3 miles to Lake Pontchartrain. Their tributaries on CBMB are ephemeral in the upper reaches and intermittent in the lower reaches. High water levels in Lake Pontchartrain from high tides, strong easterly winds or tropical storms undoubtedly slowed drainage of these streams on occasion, influencing on-site flooding and hydrology. During periods of low rainfall the lower reaches of these streams become saltier supporting marine life during periods of low rainfall; however, no data have been found to suggest salt water intrusion occurs in these streams as far north as CBMB, though portions of CBMB have almost certainly been exposed on rare occasion to saltwater storm surge during major tropical storms. In the upper reaches of the bayous or their tributaries, beavers locally impacted hydrology.

2. Existing Hydrology and Drainage Patterns

The Bayou Castine-Cane Bayou Watershed is south centrally located in the larger Liberty

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Bayou-Tchefuncta Subwatershed (HUC 08090201), which is part of the Lake Pontchartrain Basin. CBMB will service the portions of the Lake Pontchartrain Basin within St. Tammany Parish, which shall be the Primary Service Area (Attachment MBI - A, Figure 4). This includes U.S.G.S. Hydrologic Cataloging Unit codes (HUC) 08090201 and 08070205, the Liberty Bayou – Tchefuncta and Tangipahoa River drainage basins respectively, and totals approximately 456,106 acres (Attachment MBI – A, Figure 4).

The current hydrology of the pine flatwood wetlands/pine savannas at CBMB, as it was historically, is largely driven by direct precipitation and sheet-flow from heavy rain events, primarily in the winter and spring. The relatively flat terrain as shown via LIDAR imagery (Attachment MWP - A, Figure 9), poorly-drained soils and high water tables in the southern part of the Parish, including CBMB, support much wetland vegetation. At CBMB, lack of regular natural or prescribed fire has resulted in alteration of natural community structure by thick brush and off-site tree buildup. Such heavy encroachment by off-site trees and brush has greatly increased evapotranspiration on site, contributing to dryer conditions than would otherwise be the case. Research in pine woodlands in the southeastern U.S. (e.g., Edwards et al. 2012, McLaughlin et al. 2013) has shown a clear linkage between vegetation density/tree stocking and the amount of surface and ground water available on site (the more trees and brush, the less available surface and ground water).

Overall, stream hydrology of CBMB is largely intact, with the exception of some impacts on Cane and Castine bayous and other impacts discussed below. Current hydrology of Cane Bayou north of and within CBMB has undoubtedly been impacted by stream channelization evident on aerial photographs that occurred mostly south of CBMB, extending to the old railroad tram (now the Tammany Trace) south of US Hwy 190. The immediate floodplain area of the bayou on CBMB is very narrow and areas adjacent to the bayou within CBMB are gently sloping and largely non-wet due in part to rapid precipitation runoff. Cane Bayou (also known as Bayou Cane) was designated as a state Natural and Scenic Stream in 1987 due to its variety of habitats and non-channelized and scenic, navigable southern portion.

Current hydrology of Bayou Castine in its upper reaches has also been impacted by stream channelization, including on the proposed CBMB. As evident on aerial photographs, the stream has been channelized from the cypress-tupelo swamp community on the NNC south of CBMB, northward through CBMB to Interstate 12. In addition, two wet swales located on adjacent Pelican Park that naturally drain on the CBMB west parcel have been cleared and ditched. The grassy ditches drain onto the west parcel, entering via a large 5 foot diameter culvert under the southeast part of the North Loop Trail and flowing into a cypress-tupelo/scrub-shrub buffer zone. The clearing and channelizing of these areas have undoubtedly had some impact on flow amount and velocity onto the west parcel, but this impact is not thought to be significant to the wet pine savanna in the area on CBMB. The culvert provides for drainage similar to natural flow, with no impediments.

Attachment MWP - A, Figures 10a, 10b, and 10c are close-up LIDAR images of CBMB that show pre-impact drainage flow patterns based on natural topography of the area and before unnatural impacts to the site. Existing or current man-made impacts to hydrology includes the Elevated Woods Road built on a berm of soil that impedes sheet flow, particularly on the

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western end of the road. Adjacent linear ponds from which the soil for the elevated road was obtained are not thought to impact hydrology as they are isolated and not connected with any drainage. A small ditch dug perpendicular to the elevated road is thought to impact sheet flow and may possibly impact hydrology locally. See Attachment MWP - A, Figure 11 for post-impact drainage flow patterns due to these impediments, and Attachment MWP - A, Figure 12 for current conditions of CBMB that shows location of the elevated road and other man-made features. A gravel road (Log Cabin Road) on the far east portion of CBMB (Attachment MWP - A, Figure 12) is also impacting hydrology based on close observations during and after rainfall events. Additionally, a small ditch dug perpendicular to Log Cabin Road, potentially captures sheet flow, and thus may be altering the hydrology of adjacent wetlands.

D. Vegetation

1. Historical Plant Community

Physio-geographic Setting:

The CBMB occurs in the East Gulf Coastal Plain (EGCP) Ecoregion (The Nature Conservancy 2001). The EGCP Ecoregion is a portion of Bailey's larger Outer Coastal Plain Mixed Forest Province (Bailey 1994). Ecoregions are defined as broad regions that possess similar soils, topography, plant and animal species, climate, hydrology and other natural processes. The EGCP ecoregion is physically characterized by subtle topography, a warm to hot, humid, maritime climate, and soils derived from unconsolidated sands, silts and clays, transported to the ecoregion by weathering of the Appalachian Mountains and other northern areas. As part of the Southeast Coastal Plain region, other features shared include a high percentage of land area in wetlands, a dominant role of frequent fire over a great majority of the landscape, a diversity of river and stream systems, diverse estuarine and tidal systems, and significant large-scale disturbance events (tropical storms/hurricanes).

The CBMB is found on the Pleistocene-aged Prairie Terrace formation on surfaces that show little dissection (Geologic Map of Louisiana, Louisiana Geological Survey, 1984). In fact, the area in southeast Louisiana where CBMB is found is known as the Gulf Coast Flatwoods Region, named for broad expanses of poorly-drained flats, and extends from southeastern St. Tammany Parish to eastern Livingston Parish (Daigle et. al. 2006). Drainages on CBMB are Holocene-aged alluvial deposits.

There is little topographic relief on CBMB except near drainages, as more clearly shown on 4-foot contour LiDAR imagery (Attachment MWP - A, Figure 9). Elevation of the site generally trends from north to south and ranges mostly from 8 to 24 feet, with 4 feet along lower sections of Cane Bayou and Bayou Castine. The East Parcel is typically higher (most areas higher than 15 feet) than the West Parcel (most areas lower than 15 feet).

Historic Vegetation

According to old historical accounts (e.g., Lockett 1874) and early and mid-1800s U.S. Government General Land Office survey records (e.g., Gray 1821) that contain accounts of

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witness trees and anecdotal observations, the majority of the hills and flats of St. Tammany Parish, including the area encompassed within CBMB, were dominated by longleaf pine woodlands and savannas (See Smith 2004; Daigle et al. 2006). Historically (up until the early 1900s), the majority of CBMB supported wet longleaf pine savannas, narrow bayhead swamps dominated by slash pine and hardwood along some upper drainages, small stream forest, and cypress-tupelo swamp mixed with scrub-shrub wetland along lower drainages (Attachment MWP - A, Figure 13). Upland longleaf pine flatwoods were present on gentle rises on the flats, and non-wet mixed loblolly pine-hardwood forest on lower slopes leading to small stream forests. Frequent surface fire, burning mainly through the herbaceous litter and pine needles on the ground, was arguably the most significant functional process that created and maintained the composition, structure and character of the pine flatwood wetland habitats.

The historic wet pine savannas on CBMB occurred on flat or gently concave areas in between and topographically higher than the drains. They were dominated by longleaf pine woodlands and savannas, with the dryer flatwoods on slightly higher topographic positions. Frequent fire from lightning and Native Americans helped maintain wet pine savannas and associated habitats on CBMB. Many places burned to or very near active channels of the small drains, thus confining bayhead strands and non-wet mixed hardwood – loblolly forest to relatively narrow zones flanking those drains.

The original wet longleaf savanna habitat of the region was a very open "forest", with the scattered trees almost exclusively longleaf pine, growing over a dense ground cover of grasses, sedges and forbs (Smith 1996). Low tree density in wet pine longleaf savannas was probably attributable to a number of wetland site and soil characteristics, among them: 1) longleaf regeneration is impeded by standing water, which precludes seedling establishment (perhaps the most important factor); 2) high water tables and heavy subsoils inhibit deep root development, thereby encouraging shallow rooting of longleaf, making it more prone to wind-throw; and 3) wetlands are not the ideal environment for longleaf, and trees growing there are under stress, making them more susceptible to insect or disease attack.

Based on best examples remaining today, grasses and sedges typically dominated wet longleaf pine savannas, and included broomsedges (*Andropogon* spp.), little bluestem (*Schizachyrium scoparium*), panic grasses (*Panicum* spp.), rosette grasses (*Dichanthelium* spp.) three-awn grasses (*Aristida* spp.), toothache grass (*Ctenium aromaticum*), hairawn muhly (*Muhlenbergia expansa*), plume grasses (*Saccharaum [Erianthus]* spp.), jointgrasses (*Coelorachis* spp.), beak-rushes (*Rhynchospora* spp.), yellow-eyed grasses (*Xyris* spp.), umbrella sedges (*Fuirena* spp.), nut-rushes (*Scleria* spp.), giant white-top sedge (*Dichromena [Rhynchospora] latifolia*), pipeworts (*Eriocaulon* spp.), bog buttons (*Lachnocaulon* spp.), fimbry-sedges (*Fimbristylis* spp.) and others. Some forbs common in the community include yellow pitcher plant (*Sarracenia alata*), parrot pitcher plant (*S. psittacina*), false fox-gloves (*Agalinis* spp.), lobelias (*Lobelia* spp.), meadow beauties (*Rhexia* spp.), bog thistle (*Eryngium integrifolium*), narrow-leaved hog-fennel (*Oxypolis filiformis*), milkworts (*Polygala* spp.), blazing stars (*Liatris* spp.), rose-gentians (*Sabatia* spp.), sundews (*Drosera* spp.), butterworts (*Pinguicula* spp.), bladderworts (*Utricularia* spp.),

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and fringed orchids (*Platanthera* spp.). Various additional species belonging to the lily family (Liliaceae), sunflower family (Asteraceae), and orchid family (Orchidaceae) are prominent. Club-mosses (*Lycopodiella* spp.) and sphagnum moss are often abundant.

A very limited amount of bayhead swamp occupied narrow upper drainages and were typified by slash pine and a variety of hardwoods. In some areas, switch cane (*Arundinaria tecta*) comprises the dominant understory, possibly giving rise to the name of Cane Bayou. These are small inclusions that occur primarily in or immediately adjacent to stream bottoms. Sweet bay (*Magnolia virginiana*) and swamp black gum (*Nyssa biflora*) are now and were historically the most common overstory trees in bayhead swamps (LDWF, 2009). Laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), water oak (*Q. nigra*), yellow poplar (*Liriodendron tulipifera*), slash pine (*Pinus elliotii*), and pond cypress (*Taxodium ascendens*) and are often present. A diversity of shrubs or small trees, primarily evergreen, are prevalent in the community. Species that may be present include red bay (*Persea palustris*), swamp cyrilla/titi (*Cyrilla racemiflora*), water ash (*Fraxinus caroliniana*), wax myrtle (*Morella cerifera*), bigleaf wax myrtle (*M. heterophylla*), littleleaf gallberry (*I. glabra*), bigleaf gallberry (*I. coriacea*), American holly (*I. opaca*), fetterbush (*Lyonia lucida*), and others. Herbaceous flora is usually sparse but ferns can be conspicuous. Sphagnum moss may be abundant.

Down-cutting, perhaps caused in part from surrounding land use, such as land clearing for timber management and past stream channelization, has resulted in very narrow riparian flood plains supporting a minor amount of small stream forest. It's unclear at this time what the original character and vegetation was in these small stream flood plain zones. Small stream forests are seasonally flooded for brief periods. Common trees historically present in the area (LDWF 2009) included: southern magnolia (*Magnolia grandiflora*), sweet bay, beech (*Fagus grandifolia*), black gum (*Nyssa sylvatica*), swamp white oak (*Quercus michauxii*), white oak (*Q. alba*), water oak, laurel oak, cherrybark oak (*Q. pagoda*), sweet gum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), red maple, river birch (*Betula nigra*), water ash, yellow poplar, spruce pine (*Pinus glabra*) and loblolly pine. Some primary midstory and understory associates included silverbell (*Halesia diptera*), ironwood (*Carpinus caroliniana*), arrow wood (*Viburnum dentatum*), Virginia willow (*Itea virginica*), sweetleaf (*Symplocos tinctoria*), and others.

Lower water tables and sloping topography which facilitates relatively quick water runoff, promoted narrow to relatively broad expanses of upland habitat flanking the Cane Bayou and its tributaries. A loblolly pine - hardwood forest dominated by loblolly and spruce pine (*P. glabra*) with mixed hardwoods characterizes these areas. Historically this zone was typified largely by longleaf pine and relatively fire-tolerant hardwoods at least on the middle to upper-most slopes away from the streams.

Cypress-tupelo swamp is present along Bayou Castine in the northwestern portion of CBMB. This deep wetland forest type (referred to as Baldcypress-Tupelo Swamps in The Natural Communities of Louisiana, LDWF, 2009) was historically and currently is a forested, alluvial swamp growing on intermittently exposed soils. The soils are inundated or saturated by surface water or ground water on a nearly permanent basis throughout the growing season except during periods of extreme drought. Bayous commonly intersect these wetlands. There is relatively low floristic diversity. Baldcypress and tupelo gum are co-

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dominants. Common associates are swamp blackgum, swamp red maple (*Acer rubrum* var. *drummondii*), black willow (*Salix nigra*), green ash (*F. pennsylvanica*), water elm (*Planera aquatic*), water locust (*Gleditsia aquatica*), Virginia willow, and button bush (*Cephalanthus occidentalis*). Undergrowth is often sparse because of low light intensity and long hydro-period.

Scrub-shrub wetlands (referred to as Scrub/Shrub Swamp in The Natural Communities of Louisiana, LDWF, 2009), found intermingled with the cypress-tupelo swamp at CBMB, is a low, flat wetland dominated by woody vegetation less than twenty feet tall. Soils are very poorly drained, surface water present for extended periods, sometimes drying during late summer or during drought. Species include true shrubs, young trees, and shrubs or trees that are stunted due to some environmental condition(s). Characteristic species include buttonbush, sea myrtle (*Baccharis halimifolia*), dwarf palmetto (*Sabal minor*), wax myrtle, marsh elder (*Iva frutescens*), lead plant (*Amorpha fruticose*), and swamp red maple.

Upland (non-wet) longleaf pine flatwoods were present on gentle rises and slopes on the flats (Smith 1999), and non-wet mixed hardwood-loblolly forests (LDWF 2009) were found on lower slopes leading to small stream forests.

2. Existing Plant Community

Both wetland and upland (non-wetland) plant communities are present on CBMB. The current wetland community types on CBMB consist of degraded wet pine savanna, narrow bayhead swamps called "bayhead strands" (a very minor component found near small drains as inclusions in pine savanna), cypress-tupelo/scrub-shrub swamp, and very narrow small stream forests (along waters of the U.S.). Upland non-wet communities currently found on CBMB consist of loblolly pine - hardwood forest and degraded pine flatwoods (Attachment MWP - A, Figure 5).

Wetlands

A total of 684.9 acres of wetland mitigation credit acres are present on CBMB, 394.7 of which are in Section 1, and 290.2 in Section 2. Descriptions of the wetland types present are provided below.

Degraded wet pine savanna:

Wetlands to be restored on CBMB consist primarily of degraded wet pine savanna habitat which is presently in two general conditions as follows.

Heavily Encroached Wet Pine Savanna (PF/S):

The heavily encroached pine savanna comprises approximately 266.3 acres (Attachment MWP – A, Figure 5), and is located exclusively in Section 1. This area contains a mature pine forest with towering trees 80 to 120 feet tall, and a well-developed mid-canopy of pine and hardwoods such as water oak, laurel oak, live oak (*Quercus virginiana*), sweetgum, southern magnolia, and red maple. Most of the pine is slash and loblolly, but some old-growth longleaf pines (> 100 years of age) remain in some areas. A relatively thick 10 to 20 foot tall midstory is present, dominated by yaupon (*Ilex vomitoria*), bigleaf gallberry, littleleaf

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gallberry, wax myrtle, American holly and saplings of canopy and mid-canopy tree species. A poorly-developed herbaceous groundcover is present in this area, with only a very few remnant longleaf pine savanna species present, such as suppressed yellow pitcher plants.

Moderately Encroached Wet Pine Savanna:

Moderately encroached wet pine savanna occurs in two main areas on CBMB totaling 418.6 acres, 128.4 in Section 1 and 290.2 in Section 2 (Attachment MWP - A, Figure 5). In Section 1, moderately encroached pine savanna consists of mostly young pine forest that was logged in the mid-1990s as a result of a severe southern pine bark beetle (*Dendroctonus frontalis*; SPBB) outbreak, and later was reportedly impacted by a hot wildfire on the northern portion in 2001. This wet savanna area has regenerated into a mixture of loblolly pine and hardwood saplings between 30 and 40 feet tall, and a mixture of native and non-native shrubs, such as wax myrtle and Chinese tallow (*Triadica sebifera*) between 10 to 15 foot tall. The area is now very fire suppressed. Portions of Section 1 were planted with longleaf pine seedlings by NNC volunteers over the last decade but very few of these seedlings survived. This is due in part to lack of prescribed fire that has allowed invasion by off-site woody species, forming a dense understory and suppressed herbaceous vegetation.

Most of Section 2 contains moderately encroached wet savanna that experienced a hot wild-fire (reported to have been in 2001, L. Burch, NNC, personal communication) that killed most of the trees leaving a very open pine overstory and some areas completely devoid of a canopy. In this area a midstory is also mostly lacking, but a dense shrub layer with most shrubs over 5 feet in height, is present in most of this unit. The midstory that is present is comprised of loblolly and slash pine, water oak, dahoon holly (*I. cassine*), littleleaf gallberry, wax myrtles, red bay, swamp black gum, sweetbay magnolia, fetterbush, red chokeberry (*Aronia arbutifolia*), and laurel saw briar (*Smilax laurifolia*). Extensive areas of poorly to moderately developed groundcover are present and are composed of several savanna species such as old field broomsedge (*Andropogon virginicus*), savanna bushy bluestem (*A. hirsutior*), panic grasses (*Dichantherium* spp.), savanna panic grass (*Dichantherium scabriusculum*), honeycomb aster (*Balduina uniflora*), yellow-eyed grasses, beak rushes, spikerushes (*Eleocharis* spp.), clubmosses, and meadow beauty (*Rhexia alifanus*). Within the area burned by wildfire several years prior, there is a zone that did not suffer significant mortality in the overstory, but did so in the mid and understory. This area has regenerated into an extremely dense stand of young pine saplings.

Narrow Bayhead Swamps:

Within the heavily and moderately encroached wet pine savanna areas are linear zones, or strands, of bayhead swamp habitat that occur along poorly defined shallow drainages within wet pine savanna. These areas are slightly lower topographically than the surrounding longleaf pine savanna habitat and are dominated more by sedges and forbs than highly pyrogenic grasses present in longleaf pine savannas. Because these areas are of very minor extent, they are not mapped separately and are considered very small-scale inclusions in wet pine savanna (Attachment MWP - A, Figure 5). They occur in the extreme upper reaches of tributaries to Cane Bayou. Hardwoods present include swamp blackgum, red maple, and laurel oak. Pond cypress which is often in similar settings elsewhere in the

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region, was not noted. In some areas, the predominant understory is nearly pure stands of switch cane.

Cypress-Tupelo Swamp/Scrub-Shrub Wetland:

Cypress-tupelo swamp mixed with scrub-shrub wetlands is present along Bayou Castine in the northwestern part of CBMB (Attachment MWP - A, Figure 5). The lower portion of the swamp within CBMB is a mature forest with 80% closed canopy. The upper portion of the swamp is along a channelized portion of Bayou Castine. Here the forest is more open, along the bayou and in natural oxbow sloughs, converting to scrub/shrub where it is impacted by beaver. Dominant species in the forested swamp areas consists of bald cypress, tupelo gum, swamp blackgum, Drummond red maple, ash (*Fraxinus spp.*), and sweetgum. Lining the banks are additional species such as ironwood, southern magnolia, and Chinese tallow. Shrub and herbaceous species include wax myrtle, sea myrtle, black willow, Virginia willow, smartweed (*Polygonum sp.*), Gulf swampweed (*Hygrophila lacustris*), savanna panicgrass (*Phanopyrum gymnocarpon*), lizard tail (*Saururus cernuus*), cattails (*Typha spp.*), iris (*Iris sp.*), common rush (*Juncus effusus*), and giant cutgrass (*Zizaniopsis miliacea*).

Small Stream Forest:

Down-cutting by Cane Bayou and its tributaries immediately downstream from the bayhead strands has resulted in very narrow riparian flood plains with relatively deeply incised channels and rather steep banks. A small stream forest dominated by loblolly and spruce pine (*P. glabra*) characterizes these areas. Current species in the narrow floodplains include swamp blackgum, sweetgum, laurel oak, red maple and dwarf palmetto (*Sabal minor*), western mayhaw (*Crataegus opaca*) and switch cane. Slopes by the small stream forest consist of many of the same species listed below under mixed hardwood-loblolly forest. At least one beaver dam was found along a tributary to Cane Bayou creating a small ponded area. Because the small stream forest zones are so narrow and immediately adjacent to the streams, they have been considered as part of "Other Waters" (Attachment MWP - A, Figure 5) and have not been included as mitigation restoration areas.

Uplands

In addition to wetlands, a total of 411.7 upland acres are present on CBMB (Attachment MWP - A, Figure 5). Uplands are in two general categories as follows.

Mixed Hardwood-Loblolly Forest:

This habitat type comprises 343.3 acres, of which 182.9 are in Section 1 and 160.4 in Section 2. It occurs on gentle slopes along and approaching Cane Bayou and its tributaries. It is dominated by loblolly pine, Elliott's blueberry (*Vaccinium elliotii*), yaupon, green briar (*Smilax bonanox*), and bracken fern (*Pteridium aquilinum*), among other species. Historically this zone was typified by non-wet longleaf pine flatwoods (Smith 1999), and was comprised mostly of longleaf pine and relatively fire-tolerant hardwoods at least on the middle and upper slopes away from the streams. True mixed hardwood-loblolly forest was historically found on lower slopes leading to small stream forests. With fire suppression and other land management activities, more of the area changed to this current habitat type.

Pine Flatwoods:

Pine flatwood uplands (non-wet) consist of 68.4 acres on CBMB (Attachment MWP - A, Figure 5), all of which are in Section 1. These flatwoods are in better drained positions, slightly higher topographically than wet pine savanna, places that are relatively flat, gently sloping or slightly convex. Historically, these places were dominated by longleaf pine flatwoods interdigitated with wet pine savannas that occupied poorly drained and seasonally saturated/flooded depressional areas and low flats (Smith 1999). The better drained areas currently contain slash and loblolly pine approximately 50 to 60 foot tall, southern red oak (*Q. falcata*), white oak, black gum (*N. sylvatica*), sweetgum, southern crabapple (*Malus angustifolia*), yaupon, water oak, tree huckleberry (*V. arboreum*), Elliott's blueberry, wax myrtle, Chinese tallow, and winged sumac.

Invasive exotics are currently present only to a limited extent. The species observed that are of most concern, based on potential to spread and become increasingly problematic if left untreated, include cogon grass (*Imperata brasiliensis/cylindrica*), Chinese tallow tree, Chinese privet (*Ligustrum sinense*), and Cherokee rose (*Rosa laevigata*).

VI. Description of Work

The CBMB will provide 684.9 acres of wet longleaf pine flatwood/savanna and associated habitats and buffer to compensate for unavoidable wetland impacts in the Lake Pontchartrain Basin within St. Tammany Parish. Along with the 684.9 acres of Enhancement of wet longleaf pine flatwood/savanna (PF/S) habitat, there will be 255.7 acres of buffer (240.7 upland pine flatwood and 15 acres of cypress-tupelo swamp/scrub-shrub swamp). (Note: There will also be 224.9 acres of non-credit acreage included within the CBMB.) Proposed Enhancement areas are shown in Figure 12a. Proposed natural communities to be restored are shown in Attachment MWP - A, Figures 13 and 14a.

In order to accomplish this task, the Sponsor shall complete the soils/hydrologic and habitat restoration work as specified in this section. Proposed activities to meet the goals and objectives for CBMB are aimed to restore degraded wetlands where most functions have been severely degraded by prior land use management, most notably by a fire-suppressed vegetation regime and prevalence of off-site species.

The following restoration and associated actions are proposed:

- Restore open longleaf pine wetland composition and structure via harvest of tree species not indigenous to the habitat type (Eastern Parcel only), prescribed fire and other means as detailed below.
- Re-establish surface and ground water hydrology by removal or amelioration of artificial features that alter natural drainage patterns (e.g., adding low water crossings to elevated woods road, plugging ditch) and by reduction of tree and shrub density across the site (reducing evapotranspiration and increasing available water).
- Replant 684.9 acres of historic longleaf pine savanna wetlands and 240.7 acres of pine flatwood uplands with suitable genetic stock of longleaf pine and conduct prescribed burning every 1 to 3 years to rehabilitate and maintain indigenous pine savanna composition and structure.
- Control invasive species across CBMB.

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- Monitor at a frequency and intensity to determine if the compensatory mitigation project is on track to meet performance standards and whether management plan modifications are needed.
- Implement adaptive management as needed as the project progresses and make any mid-course corrections as dictated by restoration results and current research on longleaf pine wetland system restoration practices.

Some of these activities will occur only once initially, while others will need to be repeated until desired conditions are met. Prescribed fire will be implemented every one to three years throughout the life of the bank and for long-term maintenance.

Sponsor's proposed work will produce wetland "credits" that result from restoration of wetland function, plant community structure and composition, natural processes and hydrology. These credits can be used by government agencies in St. Tammany Parish to help compensate for permitted unavoidable impacts in the area associated with US Army Corps of Engineers (USACE) permits through Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

The bank area will be divided into Section 1 and Section 2. Section 1 will be the first area to undergo restoration management which will begin immediately upon signing the MBI. Efforts will be made to complete restoration and reach long-term success criteria within 10 - 15 years. Initiation of Section 2 will start when construction work of Section 1 is near completion. Exact timing will depend upon on credit needs by STP, but is anticipated between Years 2 and 3.

Time Line: Restoration of plant community structure and composition will occur in stages over time. However, initial forest thinning/brush removal treatments will occur during the initial restoration work and will have immediate benefits to local hydrology. Those initial activities will be completed prior to initial credit release for Section.

Prior to any restoration work on the CBMB, six management units (MUs) will be established. Usually MUs are established to account for habitat types present and/or areas with management histories that are significantly different from each other, but in this case they are being established for logistical and efficient management of the site. (See Attachment MWP - A, Figure 15). Section 1 will include MUs 2 – 6, and Section 2 will include MU 1. Dividing the area into Management Units will allow for coordinated sequencing of restoration and management activities in each MU, increase the likelihood of completing a sequence of contractor-dependent management actions in an area on a timeline, and will allow for staged credit releases based on completion of all required tasks in a MU at each performance standards level.

The management units as shown for CBMB (MWP-A, Figure 15) will also be synonymous with phasing of the proposed work, so that each management unit will represent a phase for the CBMB. Management units 1-6 represent phases 1-6, and any monitoring requirements as stated in the CBMB MBI (reference WP Section IX, Monitoring Requirements) will need

to be submitted independently for each MU/phase in order to address credit release requests as well as compliance and the overall success of the individual MUs/phases.

A. Soils/Hydrologic Work Plan

As discussed above at V.C.2., certain artificial features and conditions are significant and their remediation will result in restored wetland functions and services.

Elevated Woods Road and Adjacent Ditch Remediation:

Woods Road: An elevated woods road that is impeding sheet flow is present in Section 1 in the west portion of the east parcel of CBMB. The road, which measures 4,500 feet long and 20 feet wide, is elevated an average of 1 foot, but is nearly 2 foot in places (Attachment MWP - A, Figures 11 and 12). It was built with spoil from ditches dug on both sides of the road with the ditches deepest on the eastern end. Because the elevated woods road is essential for access and management needs, particularly for prescribed fire, there are no plans to remove this road. An 18-inch-wide culvert is present on the eastern end of the road and it helps minimize the impediments to flow caused by the road, but more openings are needed. Although this culvert is functional, it will be replaced with a low water crossing for ease of maintenance and to allow more natural flow. On the western end of the road there is a non-functional culvert where a natural ephemeral channel exists, draining from northeast to southwest. To remediate the impacts from the elevated woods road and restore hydrology, STP plans to remove the non-functional culvert and replace it with a low water crossing. Additionally, 7 more low water crossings will be constructed along the road, for a total of 9. The low water crossings will be positioned in the lowest topographic areas based on LIDAR; however, before placement STP will take elevation readings along the elevated road to verify the LIDAR and insure placement of hydrologic improvements where they can best function. Final positioning will be provided following construction. Low water crossings will be constructed using standard earth moving equipment. This task is expected to take approximately 1 week to complete. Attachment MWP - A, Figure 12 shows the location of the existing culverts, with proposed low-water crossings shown in Figures 14a and 14b. Specific construction details are shown in Attachment MWP-A, Drawing Sheets 1a through 3.

Woods Road Ditch: An approximately 700 foot long and 4 foot wide ditch runs perpendicular to the elevated woods road discussed above (Attachment MWP – A, Figure 12). There is shallow spoil evident along the ditch, which itself is very shallow, averaging 1 foot deep, running parallel to an existing swale. The ditch was dug apparently to speed drainage of a portion of the wet savanna area away from the elevated road to a lower wet savanna area. Drainage here flows from the northeast to southwest (Attachment MWP - A, Figure 11). As shown in Attachment MWP-A, Drawing Sheets 1a and 2, the Sponsor proposes to plug the ditch with 3 earthen plugs on the eastern portion which is more incised. The plugs will span the width of the ditch with height to the natural grade of the surrounding topography. This activity will slow down water flow and cause it to fan out more readily into the adjacent savanna. The material for the plugs will be obtained from the adjacent spoil

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bank as noted in Attachment MWP-A, Drawing Sheet 2. This task will be completed using standard earth moving equipment and will take approximately 1 day to complete.

TABLE 4

Elevated Woods Rd. Low Water Crossings: From NW to SE

1	30.359138	N and	90.014473	W
2	30.358607	N and	90.014188	W
3	30.357212	N and	90.013487	W
4	30.355829	N and	90.012738	W
5	30.354357	N and	90.011967	W
6	30.352194	N and	90.010867	W
7	30.351354	N and	90.010431	W
8	30.349399	N and	90.009425	W
9	30.348473	N and	90.008973	W

Elevated Woods Rd. Ditch Plugs: From SW to NE

1	30.353872	N and	90.012783	W
2	30.354069	N and	90.012468	W
3	30.354224	N and	90.012133	W

Log Cabin Road and Adjacent Ditch Remediation:

Log Cabin Road: Log Cabin Road is present in Sections 1 and 2 of the far east portion of CBMB and measures 8230 feet long and 25 feet wide (Attachment MWP – A, Figure 12). The roadway is only slightly elevated and shallowly ditched, following the natural contour of the land and is either culverted or dipping down to natural low-water crossings along all major drainage-ways that it crosses. However, there is a small berm along most of the road that impedes sheet flow, causing water to back up and flow along the roadbed until reaching a major drainage-way. To remediate the impacts from Log Cabin Road, STP plans to remove 2 damaged culverts and replace them with low water crossings. Additionally, 4 more low water crossings will be placed along the road. These low water crossings have been preliminarily designed in natural drainage-ways based on field observations and LIDAR; however, before placement STP will take elevation readings along Log Cabin Road to insure placement of the hydrologic improvements where they can best function. In addition to the construction of low water crossings, minor shoulder work is proposed to take place in the vicinity of each low water crossing. STP proposes to grade the existing berm and shallow ditch back to natural ground 50 to 75 feet in each direction from the limits of each low water crossing. This will allow unrestricted sheet flow during heavy rainfall events rather than water being channelized to the limits of the low water crossing. Low water crossing construction and shoulder work will be done using standard earth moving equipment. This task is expected to take approximately 1 week to complete. Attachment MWP - A, Figure 14c shows the location of the proposed low-water crossings, with specific details in plans shown in Attachment MWP-A, Drawing Sheets 1b and 3.

Log Cabin Road Ditch: An approximately 350 foot long and 4 foot wide ditch runs perpendicular to Log Cabin Road discussed above (Attachment MWP – A, Figures 12).

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There is shallow spoil evident along the ditch, which itself is very shallow, averaging 1 foot deep. The ditch was dug apparently to speed drainage of a portion of the wet savanna on the northwest side of the road. Drainage here flows primarily from north to south (Attachment MWP - A, Figure 11). As shown in Attachment MWP-A, Figure 14c and Drawing Sheets 1b and 2, the Sponsor proposes to plug the ditch with 3 earthen plugs spanned evenly throughout the ditch. The plugs will span the width of the ditch with height to the natural grade of the surrounding topography. This activity will slow water flow, allowing it to sheet flow more readily across the adjacent wetlands. The material for the plugs will be obtained from the adjacent spoil bank as noted in Attachment MWP-A, Drawing Sheet 2. This task will be completed using standard earth moving equipment and will take approximately 1 day to complete.

TABLE 5

Log Cabin Rd. Low Water Crossings: From SW to NE

1	30.352041	N and	90.003258	W
2	30.3535	N and	90.001223	W
3	30.355171	N and	89.998888	W
4	30.356542	N and	89.996977	W
5	30.356895	N and	89.996477	W
6	30.357479	N and	89.99574	W

Log Cabin Rd. Ditch Plugs: From NW to SE

1	30.359202	N and	89.994838	W
2	30.358987	N and	89.994625	W
3	30.358769	N and	89.994399	W

Time Line: Hydrologic work involves early restoration activities that will be completed in year one, not per management unit/phase.

Pine Savanna Natural Community Structure Enhancement

The current hydrology of the wet pine flatwoods/savannas at CBMB, as it was historically, is largely driven by direct precipitation and sheet-flow from heavy rain events, primarily in the winter and spring. At CBMB, lack of regular natural or prescribed fire has resulted in alteration of natural community structure by thick off-site tree and brush buildup. The original longleaf pine and savannas supported far fewer trees and shrubs than what is present currently. Such heavy encroachment by off-site trees and brush has greatly increased evapo-transpiration on site, contributing to dryer conditions than would otherwise be the case. Research in pine woodlands in the southeastern U.S. (e.g., Edwards et al. 2012, McLaughlin et al. 2013) has shown a clear linkage between vegetation density/tree stocking and the amount of surface and ground water available on site (the more trees and brush, the less available surface and ground water). Activities to reduce stocking density of trees and shrubs, as detailed below in section VI. B., include commercial logging, prescribed fire, chemical and mechanical treatments and replanting with longleaf pine at natural but much lower densities than commercial forests.

B. Vegetation

Time Line: Restoration of plant community structure and composition will occur in stages over time. However, initial forest thinning/brush removal treatments will occur during the initial restoration of the site and will have immediate benefits to local hydrology. Those initial activities will be completed prior to initial credit release for each MU/phase in Section 1.

The primary wetland plant community to be restored and established at CBMB is wet longleaf pine savanna (termed “Eastern Longleaf Pine Savannah” in LA Natural Heritage Program, 2009). Bayhead strands, a very minor component occurring along drains as narrow linear inclusions in the pine savanna, are not nearly as extensive nor as altered in composition and structure as are the pine savannas; little restoration work is foreseen in this habitat.

To achieve desired objectives, restoration will, by necessity, initially entail a variety of aggressive management practices. The use of these practices is necessary to “push” the area toward the desired conditions (structure and composition) outlined generally above. All practices must and will be implemented in a careful and ecologically compatible fashion that promotes the overall ecological integrity of the area, and that minimizes collateral damage to wetland resources.

The scope of principal restoration and management activities that will be employed include:

- Prescribed fire
- Commercial logging/biomass harvest of undesirable pine and hardwoods
- Chemical and/or mechanical control of undesirable slash and loblolly pine (non-merchantable), hardwoods and brush
- Longleaf plantings
- Chemical control of invasive, non-native plants
- Native ground cover plantings (if needed)

The time lines provided for each activity detailed below are for Section 1 of CBMB. Efforts will be made to complete restoration and reach long-term success criteria within 10 – 15 years; annual restoration and maintenance steps have been estimated for 15 years in Attachment MWP-C. An updated MWP with restoration management activities needed in Section 2 and a time line for each will be developed when Section 2 of CBMB is implemented. The restoration activities required in Section 2 and the relative time lines for each are expected to closely mirror those presented below for Section 1.

Prescribed Fire

Prescribed fire will arguably be the most important management tool used on the tract. Fire will be applied in pine savanna wetlands and included uplands, and, during drier periods, allowed to burn into bayhead strands and along streams to return those habitats to their historical character and distribution. Burning is essential for longleaf pine regeneration, control of unwanted hardwoods and shrubs, and rehabilitation/perpetuation of rich

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herbaceous ground-cover communities. Properly timed fires stimulate native herbaceous plants to grow vigorously, flower and produce seeds, stimulate longleaf pine to grow out of the "grass-stage", and control brown spot needle-blight on young longleaf.

The historical frequency and seasonality of fire will be reestablished through an aggressive, strictly regulated burning program. Historically, most fires occurred during the growing season, which in southeast Louisiana may be considered to be mid-March to late October, with the majority of fires concentrated between late March and mid-June (early thunderstorm season). Early to mid-growing season burns will be favored over late growing season or dormant season burns, though burns at other seasons will be applied to achieve particular objectives. Burn frequency will eventually be in line with the estimated historical frequency of fires in this region, that is, every 1 – 3 years in longleaf pine upland and wet savanna restoration areas. However, in the initial restoration phase, burns will need to be applied more frequently (every 1 to 2 years) to reduce undesirable woody vegetation (in combination with mechanical and/or chemical treatments) and promote native herbaceous ground cover. Initial burns will also be smaller in size until large woody debris is minimized to prevent smoke hazards created by smoldering fuels. Section 1 will be divided into management units/phases (see MWP Attachment A – Figure 15 and 15b) via fire lines created through brush-cutting and mowing or using existing features. No significant ground disturbance will occur.

The prescribed fire program will be designed to restore the area to natural conditions and to support maintenance of those conditions in perpetuity. On-going observations of site conditions will permit modification of the prescribed fire schedule, if needed, to accomplish priority objectives. Existing fire breaks (natural or artificial), such as roads/trails and stream bottoms, will be used wherever possible to reduce unnatural disturbances to the site and allow burning in larger blocks to mimic natural fire behavior. However, where these features are not present, fire breaks will need to be installed by mechanical (mowing, mulching, cutting) and chemical treatment. No plowing or disking will occur, as these activities encourage erosion and may affect hydrology. Occasional special maintenance may be needed on fire lines in wet areas such as adding gravel, wood chips or other permeable material. Material may be carried onto the property via tractor and front-end loader or trailer. See Attachment MWP – A, Drawing Sheet 5 for planned locations of improved firelines. Length and width of fire lines to be constructed in wetlands are included in Attachment MWP – C Table 6 with the areas subtracted from the total mitigation credits at CBMB to account for impacts to vegetation from fire management activities.

To account for wildlife needs for different recovery stages after fire, burns will be rotated among burn units over time so that the entire area is not burned at one time. An exception can be made to this guidance in the early years of restoration when an aggressive fire program will be needed.

Time Line: All longleaf pine savanna restoration areas will be burned at least once by the end of year 2. Application of frequent prescribed fire will be an initial and long-term management practice in wet longleaf pine savannas and included uplands. Fire will occasionally burn through bayhead stringers and into the edges of stream bottoms. Initially,

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fires may be applied at a frequency greater than the estimated historical frequency of once every 1 – 3 years to help in the control of undesirable woody cover and restoration of the native ground cover. Where commercial removal of tree species not indigenous to the longleaf pine habitat type is needed, timing of application of fire will be determined by a number of factors, including timber marketability (whether better burned or unburned) and estimated results of fires burning under different conditions (e.g., before cut or after).

Commercial Logging of Undesirable Pine and Hardwood

Prior to development of a timber management plan, a thorough search for the endangered RCW and relic longleaf pine (longleaf 100 years or older) will be conducted following methodology under the RCW recovery plan (USFWS 2003). To facilitate restoration of pine wetlands, commercial logging of undesirable pine (slash and loblolly pine where longleaf pine occurred) and hardwoods will be needed in wetland portions and non-wet buffers of CBMB in the eastern parcel. No logging will occur on the western parcel.

Log Cabin Road (LCR) will be used as the main logging road access. Logs will be skidded to intermittent loading ramps strategically placed adjacent to LCR. Loading ramps will be situated so as to avoid wetlands and sensitive areas as much as possible. As for harvest methods and equipment, these will be typical of that used by current commercial logging operations, and will include tree shears ("feller/bunchers"), chain saws, log skidders, and log loaders. All logging events will be carefully designed, implemented and monitored. Not all pines will be removed, to allow for foraging habitat for RCW and to provide needle fall for extra fuel for prescribed fires. Extensive blocks of mixed pine-hardwood forest in pine flatwoods and mesic slopes along Cane Bayou may or may not be logged and restored to longleaf pine by the Sponsor since those areas are non-wet, and are relatively mature and scenic. The upland non-buffer areas may not be excluded from regular fire and may be burned along with the pine wetlands.

To facilitate restoration, commercial logging (and possibly biomass harvest) of unwanted and off-site trees will be needed in the heavily encroached pine savanna wetlands included in CBMB. Loblolly pine, slash pine and most hardwoods will be removed in wet longleaf pine savanna and upland longleaf pine woodland restoration areas. Because grassy ground cover is lacking in some areas, logging may be designed to initially retain a minimal cover of off-site pine to provide needle fuels for future fires. Any retained off-site pines will be removed once grassy ground cover develops. All logging or biomass harvest events will be carefully designed, implemented and monitored. Wet savanna zones will need to be very dry during harvest events to prevent excessive soil rutting and significant ground disturbance. In addition, all logging will follow a comprehensive timber deed that provides extensive direction and guidance to the contractor to protect the site during harvest operations. All removal harvests will be carefully monitored throughout implementation to ensure compliance with provided guidelines. After initial logging events for restoration purposes, commercial logging will cease on the property, including salvage logging, unless deemed essential for habitat restoration and only following a timber management plan approved by the IRT.

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Note: Logging/biomass harvest should only occur in savanna wetlands under very dry conditions to prevent excessive soil rutting and site damage. If needed dry conditions do not materialize in a reasonable time frame, chemical/mechanical methods and fire will be the only practices available to remove unwanted brush and trees. Also, any logging along Cane Bayou shall be coordinated with LDWF Scenic Rivers Program staff, as regulations apply. No logging will occur on the western parcel.

Time Line: This is an initial restoration activity that will be completed in the early restoration management of the site. If timber markets and weather conditions allow, all commercial timber removal operations will be completed by end of year 2 for Section 1.

*Chemical and/or Mechanical Control of Slash and Loblolly Pine (Non-Merchantable),
Hardwoods and Brush.*

Chemical and possibly mechanical methods will be needed initially in most pine savanna areas to control undesirable small trees and large brush. Observations from other pine wetland restoration efforts in the region indicate that prescribed fire alone is usually not sufficient to reduce shrub cover to desired levels. In areas open enough for ground crews to work efficiently, highly controlled herbicide treatment will be the first practice applied. Evaluations will then be made for needed follow-up mechanical treatment, if any. In areas too thick for ground herbicide crews to work effectively, herbicide applications will be applied after logging and/or other mechanical work as needed. However, logging, as noted above, will only be permitted in savanna wetlands under very dry conditions to prevent rutting. If those conditions do not materialize in a reasonable time frame, chemical/mechanical methods and fire will be the only practices available to remove unwanted brush and trees. All herbicide applications will employ chemicals approved for use in wetlands and that are minimally damaging to herbaceous ground cover. Herbicide treatment protocols will be carefully designed and implemented, and monitored throughout implementation to ensure compliance with provided guidelines.

As stated, mechanical treatment with appropriate mechanical methods (e.g., brush mowing, mechanical chopping, strategic dozing) may be needed in very thick areas in the eastern parcel inaccessible to herbicide ground crews. No mechanical treatment will occur on the western parcel. [Note: Mechanical treatment should only occur in savanna wetlands under very dry conditions to prevent rutting]. Once such areas are mechanically treated, a follow-up herbicide application will be needed. In most cases, a prescribed burn will be applied following the mechanical/chemical brush treatment. Based upon results from other restoration projects in the area, it is likely that more than one herbicide application (a year or more apart) will be needed to fully control undesirable brush and trees.

Time Line: This is an initial restoration activity that will be completed early in the restoration process. Undesirable brush and trees will be greatly controlled by year 2, and is projected to reach final desired parameters by year 4 (allowing time for at least two herbicide treatments and two prescribed burns).

Longleaf Plantings.

Because longleaf pine has essentially been eliminated from most of CBMB, it will be necessary to plant longleaf pine seedlings in the great majority of the historic wet pine savanna zones of CBMB (the only exception being in the few areas with sufficient mature longleaf present to allow natural seedling establishment). Plantings will follow logging and other mechanical treatments as needed for initial control of off-site trees and brush, herbicide application to control brush, and the application of at least one prescribed burn.

Seedlings will be planted at the appropriate season, ideally December through February, once the site is in the appropriate condition for planting (see site prep steps above). At least 300 seedlings will be planted per acre, either through patch planting (cohort planting) in areas with sufficient perennial native grasses to carry robust fire, or in linear fashion (e.g., random rows) to allow efficient follow-up chemical seedling release in areas anticipated to have heavy weed or brush competition initially after planting. For greatest likelihood of success, latest generation containerized longleaf seedlings will be used instead of bare-root seedlings. Seedlings will be those grown from seeds obtained from an area in near geographic proximity to CBMB, and genetically compatible with southeast Louisiana (e.g., southern Mississippi). Planting will be done as early in the dormant season as possible, and all planting will be done by hand and not by mechanical means. The containerized seedlings will be "high planted" (i.e., with the upper 2 inches or so of the plug exposed) in wetter sites to improve survival (Mark Hains, The Longleaf Alliance, Personal Communication). Herbivory is not a problem with longleaf pine as young seedlings/saplings are rarely if ever eaten by native grazers. Weed control for seedling release may be needed in areas that do not develop an adequate cover of native warm season grasses to carry robust fire. In this situation, appropriate herbicides will be spot applied over seedlings to control weedy competition within a year after planting.

Time Line: All areas needing planting are projected to be planted by year 3. This is an initial restoration activity that will be completed in the first dormant season following logging and other mechanical treatments as needed for initial control of off-site trees and brush, herbicide application to control brush, and the application of at least one prescribed burn.

Chemical Control of Invasive, Non-Native Plants.

Invasive exotics are currently present only to a limited extent. The non-native species observed that are of most concern, based on potential to spread and become increasingly problematic if left untreated, include cogon grass (*Imperata brasiliensis/cylindrica*), Chinese tallow tree, Chinese privet (*Ligustrum sinense*), and Cherokee rose (*Rosa laevigata*). Cogon grass control will require application of appropriate chemicals at the correct season; it is probable that repeated applications will be required to completely kill patches. The Sponsor will take action to eliminate cogon grass in nearby areas under their control and where allowed. All cogon grass areas will be treated prior to any mechanical actions, including logging, on the property. Tallow tree and privet in pine savanna areas will be principally controlled by frequent fire. However, there may be some problem areas or scattered individuals that will need herbicide treatment. The great majority of invasive non-native plants will be killed during chemical and mechanical brush control operations where undesirable native and non-native species will be targeted. Following this activity, the

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Sponsor will apply at least two prescribed burns and then thoroughly survey the site to assess tallow and privet control. If needed, appropriate herbicides will be applied to problem areas. Tallow and privet along or near the drains may need direct chemical treatment since fire will probably not be frequent or intense enough to control them in those areas. Cogon grass is a highly invasive grass that occurs in patches primarily along existing roads and trails, particularly near the closed landfill where it is prevalent. The Sponsor will not only control cogon grass on the mitigation area, but will implement control on all its ownership in the area to help prevent recurring infestations on CBMB.

Time Line: This is mainly an initial restoration activity that will be primarily completed in the early restoration management of the site, although ongoing monitoring and control will be needed in perpetuity. All initially identified invasive species infestations will be treated very soon after the inception of management. All identified cogon grass infestations will be treated as early as possible in year 1, and prior to any mechanical restoration activities. Treatment of tallow and privet in bayhead strands and stream bottoms will be completed by year 2. Follow-up treatments will be needed in perpetuity as these species are widely established in the local landscape and will continually spread into the area. On-going long-term monitoring for invasive species will be conducted and any problematic invasive species infestations will be treated as they are detected.

Native Ground Cover Plantings

Strategies for restoring native savanna ground cover in the southeast U.S. are relatively new and much is unknown about the best methods (e.g., planting times, planting rates, seed bed conditions, etc.). In addition, local ecotype seeds of needed species are very limited in availability.

Ground cover plantings may be needed in a limited number of places in the western parcel where native grasses fail to sufficiently recolonize areas to effectively carry fire. Initially, at least a few desirable warm season grasses, such as broom-sedges and little blue stems (*Andropogon* spp., *Schizachrium* spp. respectively), may be needed to establish a robust fire-carrying ground cover. If local ecotype seed materials do not become commercially available in the next few years, seeds may need to be collected from nearby source areas for these plantings. This has been successfully performed by The Nature Conservancy elsewhere in St. Tammany Parish, and the Parish will consult with The Nature Conservancy for guidance in any native ground cover planting needs. [Note: No mechanical soil preparation will occur in the eastern parcel.

Time Line: If establishment of desirable native grasses is considered insufficient to carry fire, local ecotype warm-season native grasses will be planted. Plantings will follow removal of undesirable trees and brush and completion of at least two prescribed burns; by year 5, if needed.

C. Other Management

Road Maintenance

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Occasional road maintenance will be needed to allow continued access for management and to prevent erosion into area drainages. Maintenance may involve a variety of techniques, such as grading, dozing, reshaping, adding fill, placement of water bars, and adding gravel or other permeable material to stabilize the road surface. When the road is approaching an unusable condition or erosion is significant, degraded portions will be re-shaped using traditional road maintenance equipment, such as bulldozers and road graders. Any new material needed will be brought in via dump truck on Log Cabin Road or the Elevated Woods Road and will not be stored on site. All work will be contained within the specified road widths.

Property Survey & Boundary Maintenance

The property boundary needs to be surveyed and marked appropriately. The boundary will need periodic remarking to be maintained.

Recreation and Interpretive Signs

The western portion of CBMB has an existing nature trail (the North Loop Trail) that is part of the NNC. This trail is open for foot and bicycle traffic only. The North Loop Trail is a management asset as it provides a good fire break and access for interior ignition, and can be shut down on short notice for prescribed burns. Occasional maintenance will be needed on the trail, such as adding gravel, wood chips or other permeable material, but no widening of will occur. Access to the North Loop Trail would be via the pipeline outside of the eastern boundary of the western parcel of CBMB. Length and width of existing trails in wetlands are included in Attachment MWP – C, Table 6 with the areas subtracted from the total mitigation credits at CBMB to account for impacts to vegetation from recreational activities. Locations of existing nature trails are found in Attachment MWP – A, Drawing Sheet 6. No recreation activity will be allowed that would negatively impact management of CBMB. The Sponsor may add up to 5 foot tall metal or fire-resistant posts with numbers or codes to correspond to environmental education information on-line via the internet in the future. All posts will be located along nature trails or existing roads and will not impede land management. Environmental education on site, especially on the benefits and need for prescribed fire, is beneficial to pine savanna mitigation banks near urban areas where neighbors and citizens may not be familiar with the management required for restoration and maintenance.

VII. Maintenance Plan

Maintenance activities will be conducted by the Sponsor during establishment of the Bank (i.e., until the long term success criteria have been met and long-term maintenance has begun), and the Long-term Steward will conduct maintenance activities after all credits are sold (see Section III of the MBI – Responsibilities of Parties).

Maintenance activities will entail the following:

- Prescribed burning on the order of once every 1 – 3 years to promote and maintain favorable plant development and provide other ecological benefits of this important natural process. The plan is to burn all of Section 1 within a given Year. Burns will be conducted by a Certified Prescribed Burn Manager

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(certification issued by the Louisiana Department of Agriculture and Forestry). See Attachment MWP – B for a detailed Fire Management Plan for the property.

- Assessment and control of undesirable brush not adequately controlled by fire
- Continual surveillance and control of invasive exotic species (including those known on the property currently and those that may appear over time). Noxious/exotic vegetation stem density shall be controlled so that it comprises, on an acre-by-acre basis, not more than one percent of the total stem density. Section VI.B. details the elimination/control of invasive plants.
- Continuing reconnaissance of hydrologic conditions with follow-up remediation as may be required to maintain appropriate hydrology.
- Boundary maintenance of the Bank will include the posting of signs to demarcate the Bank boundary.

The Sponsor will continue to promote biodiversity on site and to maintain habitat suitable for the endangered RCW, including protecting existing old-growth trees as much as possible and allowing younger trees to become old-growth, maintaining recommended forest densities and structure, and allowing monitoring for this and other rare species. The Sponsor commits as much as in its power to maintain appropriate zoning and regulations to allow continued management of CBMB for future generations.

The Sponsor will make periodic inspections of the property of not less than once per year to verify that use of the property is consistent with this MBI and the conservation servitude and to inspect for any damage caused by flood, fire, storm, wind, accident, vandalism, negligence or other act or event that causes damage to the Bank. Should unforeseen major disturbances impact the site that significantly alter desired community structure or composition, a plan for restoration actions will be devised jointly by CEMVN in conjunction with the IRT, and implemented by the Sponsor.

Additional recreation may be desired in the future in addition to any referenced in the MBI. All recreation allowed will receive approval by CEMVN in conjunction with the IRT prior to initiation. Should any direct or indirect negative impacts occur from recreation activities, that activity will be discontinued.

Long-Term Management

The purpose of the long-term management section is to provide a framework for the management of the Bank property in perpetuity. As it is impossible for the signatories of the MBI at the time of signing to fully be able to identify the particular conditions of the ecosystem surrounding and including this landscape in perpetuity, this management plan only establishes objectives, priorities and tasks to monitor, manage, and maintain the covered habitat on CBMB.

The goal of long-term management by the Long-term Steward shall be to foster the viability of the Bank site's wetlands and wetland habitat in perpetuity. The Long-term Steward shall conduct annual inspections of the property during the growing season to determine the

specific needs of the property to meet this goal. The Long-term Steward shall take whatever corrective actions are needed to foster the Banks site's aquatic resource functions.

To assist the Long-term Steward in achieving this goal, the following is a list of objectives that will define the long-term viability of the Bank:

- Objective 1) Maintain the native plant vegetation at the Bank site by implementing management steps outlined above. Every 5 years the Long-term Steward shall monitor the native plant vegetation on the Bank site, using IRT-approved methodologies. Should monitoring show that long-term success criteria are no longer being achieved, the Long-term Steward will develop a new management plan for CEMVN and IRT approval using adaptive management strategies. The Long-term Steward shall then implement that plan. Burning, ecological timbering, removal of undesirable animals (e.g. feral hogs), vegetation manipulation, and replanting may be necessary. All shall be done in accordance with current applicable laws and statutes.
- Objective 2) Minimize the invasive species vegetation at the Bank site. Annual funding for invasive species and brush control in needed areas is included in the long-term maintenance funding account (Attachment MWP-C Table 3); however, at least every 3 years, undesirable brush and species listed as invasive by Louisiana natural resource agencies, or those recognized by the CEMVN/IRT, or those otherwise known to be problematic, shall be minimized to long-term success goal levels. The Long-term Steward shall implement that plan utilizing the best available technology and science current at the time to treat unwanted brush and invasive species, including, but not limited to, herbiciding (in accordance with state law and best available practice), cutting, burning, and hand pulling.
- Objective 3) Maintain the hydrological integrity of the Bank. The Long-term Steward shall repair any and all significant erosion and any blocked drainages or any other alterations to natural hydrology that may become apparent, utilizing appropriate methodologies within a time period specified by CEMVN and the IRT.

VIII. Performance Standards

In order for the Bank to be considered acceptable for mitigating wetland impacts associated with DA permits, the Property will be restored in accordance with the Mitigation Work Plan such that it meets wetland criteria as described in the 1987 Corps of Engineers Wetland Delineation Manual (the 1987 Manual) as well as the November 2010 Regional Supplement for the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0. Performance standards (success criteria) used to measure the success of the Bank are provided below.

Ecological enhancement of pine flatwoods/savanna and related habitats is measured by the progress from its current state (as described in the baseline conditions) towards an open, highly species diverse pine flatwood/savanna ecosystem with natural bayhead and slash/pine pond cypress inclusions occurring in isolated pockets and along drains. Elements that can be measured to show this progression include basic hydrologic information, longleaf pine seedling survival and growth data, vegetation composition and

structure (including overstory species and percent (%) cover, midstory woody composition and percent (%) cover, and groundcover composition and percent (%) cover). The control of woody shrubs and hardwood encroachment or lack of encroachment into savanna areas can be used to measure the success of management in moving the site to a high quality ecosystem. The following criteria use these elements to measure success.

A. Initial Success Criteria

1. Hydrology: Ground surface elevations must be conducive to establishment and support of hydrophytic vegetation, and re-establishment and maintenance of hydric soil characteristics. To that end, all alterations of the natural topography (ditching, spoil banks, land leveling, bedding, fire breaks, etc) that have affected the duration and extent of surface water have been removed or otherwise rendered ineffective in accordance with this Mitigation Work Plan.

2. Vegetation: Floristic survey of current site conditions completed. During dry season, non-indigenous hardwood overstory species within the savanna areas will be removed to a level below 10% canopy coverage and non-indigenous pine species will be thinned to below 40% canopy coverage. For an initial longleaf pine planting there must be present an initial density of 300 trees per acre. Seedlings should be planted in cohorts or patches where a well-developed grassy ground cover is in place, averaging 25-50 trees per cohort, or planted in a linear fashion in areas lacking a well-developed grassy ground cover where follow-up chemical release of seedlings will be necessary. The planting will follow the planting regime described in the vegetation/habitat restoration work plan (Section VI.B). A minimum of 50 trees per acre must survive through the end of the spring following planting (i.e. Year 1). Controlled burns must have occurred throughout the site including along the margins of and into bayheads.

B. Interim Success Criteria

1. Hydrology: By Year 3 (two years following attainment of the one-year survivorship criteria) site hydrology will be restored such that the Property meets the wetland criterion as described in the 1987 Manual as well as the November 2010 Regional Supplement to the Corps of Engineers wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0. Data demonstrating that wetland hydrology has been re-established is to be collected by the Sponsor and submitted to CEMVN in the monitoring report for the interim success criteria.

2. Vegetation and Vegetative Plantings:

a. A minimum of 40 longleaf pine seedlings/saplings per acre have survived through 3 growing seasons. These must exhibit at least 3 consecutive years (after 1 year survivorship) of annual increase in stem ground diameter or height from ground to bud tip.

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b. Plant composition of pine flatwoods/savanna and related habitats. Vegetative monitoring data should indicate that:

(1) The diversity of desirable indigenous herb species (Attachment MWP-E) shows progress toward the long-term standard of 10+ species on average per square meter (10.75 sq. feet) with a minimum average of 5 desirable species per square meter, and;

(2) Undesirable species have become less prominent, averaging less than 1 undesirable species present per plot, and;

(3) Woody shrub height and density are managed such that the average height is less than five feet and cover is less than 20%. The Bank and the perimeter will be virtually free (approximately 5% or less on an acre-by-acre basis) of exotic/invasive vegetation.

c. At least two prescribed burns should have occurred throughout the pine flatwood/savanna habitat.

C. Long-Term Success Criteria (Year 5 and beyond)

1. Vegetative cover for high quality rehabilitated longleaf pine flatwood wetland savanna will fall within the following ranges:

Table 6

Vegetation Strata	Estimated Total Percent Cover
Longleaf pine overstory	10-50%
Total overstory (longleaf pine plus various hardwoods)	15-55%
Woody understory (shrubs/small trees)	<20%
Herbaceous groundcover	90-100%

2. Pine flatwoods/savanna vegetation composition should consist of a variety of indigenous species (Attachment MWP-E) with a predominance of longleaf pine in the overstory, and additional age classes of longleaf pine in the understory. Undesirable species will be maintained at a minimum level. General goals are:

Table 7

Vegetation Composition	Species/type Composition
Overstory (>10 ft. ht.)	70-90%* longleaf pine
Understory (2-10 ft. ht.)	>50%* longleaf pine; at least 4 species of indigenous-shrubs/hardwood trees in pine flatwood wetlands.

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Herbaceous groundcover (<2 ft.)	50-90%* grasses/sedges; 10-50%* forbs; >10 native species/meter square; >50 herbaceous species/site; undesirable species <1%*
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*percent of total cover of designated strata

3. Vegetative composition of bayhead swamps closely resembles that for undisturbed bayhead swamps. At least five overstory species should be represented in the bayhead swamp. Typical species for this habitat include *Magnolia virginiana*, *Nyssa sylvatica*, *Tadodium ascendens*, *Pinus ellioti*, *Quercus laurifolia*, *Acer rubrum*, *Liquidambar styraciflua*, and *Lirodendron tulipifera*.

4. Prescribed burns throughout the pine flatwood/savanna habitat as well as along the margins of and into the bayhead swamps have occurred at a frequency of once every 2-3 years.

5. The Sponsor will provide documentation that the "Long-Term Maintenance and Protection" escrow account is fully funded.

6. The Bank and the perimeter will be virtually free (approximately 1% or less on an acre-by-acre basis) of exotic/invasive vegetation.

IX. Monitoring Requirements

The Sponsor agrees to perform all work necessary to monitor the Bank to demonstrate compliance with the success criteria established in this Mitigation Work Plan. The Sponsor will monitor the Bank in the fall of each monitoring year using the guidelines within this section of this Mitigation Work Plan.

Surveys of permanent monitoring stations will occur in the following time frame:

1. A baseline report, prior to beginning of site restoration, to be provided in conjunction with the work schedule as required in the MBI under "Requirements for initial Credit Release" (Section XI. F 1-7) to establish baseline information.

2. An "as-built report" providing documentation that vegetative plantings and the work necessary to restore site topography and wetland hydrology of the bank have been completed.

3. An initial success criteria report documenting successful completion of the work as specified in section VI. of this MWP (Description of Work) and in conjunction with initial success criteria as stated in this MWP Section VIII. A. This report will be provided the first fall of 1 year after planting.

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4. An interim success criteria report (3-4 years after successfully meeting the initial success criteria as stated in this MWP VIII.B.).
5. Long-term success criteria report (5 years after meeting the interim success criteria or when the long-term success criteria have been met, and every fifth year thereafter).

If monitoring for any given year determines that the Bank is not progressing as expected, monitoring will continue on an annual basis until the Bank successfully meets or exceeds established milestones. After achieving the initial success criteria, monitoring will occur as stated above.

Surveys will include a summary and map of where, when and percent coverage of burns that have occurred since the previous monitoring report. Data collected for initial, interim and long-term monitoring will be the same as for baseline conditions using the same sample plots.

The survey of the permanent Tree Survival and Growth monitoring stations will collect data to evaluate the survival and growth rates of planted vegetation. In addition to planted seedlings, surveys will include the number by species of volunteering trees, shrubs and woody vines. Surveys will also collect information regarding colonizing plant species, the wetland plant status (scaled from obligate (OBL) to upland (UPL)) of each, and the number of undesirable species. The survey of permanent General Vegetation monitoring stations will collect additional data including tree cover, shrub height and cover data, and number and cover of undesirable species present in all strata.

6. Beyond Long-term success the number of monitoring plots can be reduced to half the number, and surveys will include a summary and map of where, when and percent coverage of burns have occurred since the previous monitoring report. Data will be collected to evaluate the survival and presence of appropriate vegetation, and a map will be submitted with the data to show the location of the monitoring plots as well as burn history of those particular plots, photos of those plots (as well as general photos of the overall bank), and overall description of what is taking place with the plots and the bank. Other information may be requested by the IRT if necessary.

A. Management Units

Prior to any restoration work on the site of the Bank, the Sponsor will establish management units on the ground to aid in restoration and manageability. The location of proposed boundaries is shown in Attachment MWP—A, Figure 15. Management unit boundaries were determined by consideration of the following needs and attributes: concurrent habitat condition, past management history, and restoration needs; planned restoration management; minimize the size of prescribed fire areas, at least initially due to fuel loads and smoke management issues; utilize existing natural and man-made features, such as trails, roads, rights-of-way or drains; shape or juxtaposition of portions of the bank property; and complexity of features outside of but adjacent to the bank. Data-points in decimal degree for each management unit are also provided.

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NOTE: For CBMB the MUs shall be synonymous with phases as in this case these management units/phases are being established for logistical and efficient management of the site, and therefore monitoring and reporting of each management unit/phase will be required for consideration of success criteria and credit releases.

B. Permanent monitoring plots

The Sponsor shall establish plots randomly located across each management unit in a manner to insure that they capture the variation in habitat conditions across each unit. Plot locations will be permanently marked with fire-resistant materials (e.g., rebar or aluminum conduit poles). GPS coordinates shall be recorded for each plot and plot locations shall be depicted on maps and drawings submitted.

Two types of permanent monitoring plots or stations will be established, one type for general vegetation structure and composition monitoring and one type for tree survival and growth monitoring.

1. General Vegetation Plots

- A. A minimum of 1 set of permanent circular nested vegetation structure and composition monitoring plots (plots with a common center point, 10.75 sq. feet and 1/40th acre) per 20 acres will be randomly located in each management unit as described above at IX.A.
- B. Also, one set of plots per 20 acres of wetland habitat inclusions such as bayhead swamp or flatwood pond areas will be sampled, if present and included for mitigation credits. Note: Bayhead stringers, the wetland inclusion type at CBMB, will not be generating mitigation credits, and thus no monitoring is planned in these areas .
- C. At least one set of sampling plots per MU/phase shall be placed in non-jurisdictional upland buffer areas to gauge progress in those areas where present.
- D. Plot size and data to be collected from plots for vegetative structure and composition monitoring are listed below. Additional plant species noted outside sample plots will also be reported to obtain a total species list for the site. This information will be provided in tabular form. Cover will be determined from sample plots as shown in Table 3 below.

2. Tree Survival and Growth Monitoring Plots

Tree Survival Monitoring Plots will be established according to the following methodology.

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- A. One permanent circular (1/4th acre plots (1000 sq. meters)) plot per 10 acres will be randomly established in each management unit to monitor longleaf seedling survival and growth.
- B. The survey of the permanent monitoring stations will collect data to evaluate the survival and growth rate of planted longleaf seedlings. Growth rate will either be gauged by measuring stem diameter at ground level, or increase in height from ground to bud tip, for each seedling present in plots.

Table 8.

Plot size	Strata	Data Collected
10.75 sq. feet (1 M ²)	Groundcover (herbaceous) and woody plants <2 feet	<ol style="list-style-type: none"> 1. Species present 2. Cover by species 3. Total cover (undesirable species) 4. Total cover (all species) 5. Total cover (all species minus undesirable species) 6. Percent cover grasses/sedges (excluding undesirable species) 7. Percent cover forbs (excluding undesirable species)
1/40 th of an acre (1089 sq. feet)	Understory (woody plants 2-10 feet tall)	<ol style="list-style-type: none"> 1. Species present 2. Cover by species 3. Total cover all species 4. Total cover undesirable species
1/40 th of an acre (1089 sq. feet)	Overstory (>10 ft)	<ol style="list-style-type: none"> 1. Species present 2. Cover by species 3. Total cover all species 4. Total cover undesirable species
1/40 th of an acre (1089 sq. feet)	Groundcover (<2ft)	Additional species not found in 10.75 sq. feet (1 M ²)plots

C. Wetland Delineation

At year 5, the Sponsor will be required to submit a wetland delineation to demonstrate that the Property meets the wetland criterion as described in the 1987 Manual as well as the Regional Supplement of the Corps of Engineers Wetland Delineation manual Atlantic and Gulf Coastal Plain Region Version 2.0.

To submit the information for a wetland delineation the Sponsor will collect necessary data for the Bank and provide it to CEMVN project manager for review and verification.

D. Floristic Survey

To document the attainment of the long-term success criteria the Sponsor will complete a comprehensive floristic survey for the Bank as part of the monitoring requirements.

E. Photographs

Digital images shall be taken from ground level at each monitoring station and from elevated positions throughout the Bank to document overall conditions. These ground level images should provide a North, South, East and West image for each station.

F. Qualitative Analysis

The Sponsor shall evaluate the entire extent of the Bank (Section 1 of the Bank that this report represents) and provided observations concerning overall seeding survivorship, colonization of the Bank by volunteer plant species, wildlife utilization and any other information that is pertinent to achievement of success criteria.

G. Hydrologic Conditions

A description of the condition of any applicable hydrology altering features (culverts, ditches, plugs, etc.) and a general discussion of hydrologic conditions at monitoring stations.

H. Ledgers

The Sponsor will utilize the Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS) as a ledger to show all transactions. The Sponsor will input the following information: transaction date, permittee name, credits/acres sold, and DA permit number and CUP number (if applicable). No other reporting measures are required.

X. Monitoring Reports

Independent of the as-built report the Sponsor will submit monitoring reports documenting monitoring efforts at the Bank to the CEMVN by fall/winter of the year in which

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monitoring occurs. Besides monitoring results for that monitoring year, reports will include a financial assurance report documenting withdrawals and deposits. The monitoring reports will follow the guidelines listed below:

The monitoring report will include data sufficient for comparison to the performance standards found in Section VIII. of this Work Plan. The Sponsor shall also include, in these reports, a discussion of all activities which took place at the Bank.

A. Base Line Data Report

In order to demonstrate site rehabilitation through management, the Sponsor will perform a Floristic Survey using an acknowledged scientific methodology and collect vegetative monitoring data (See Section IX.B.) from the permanent plots prior to performing any site management. This baseline data will be collected at each sample plot. For habitat inclusions such as bayhead swamp or flatwood pond areas, the sponsor will identify species composition of the various vegetative strata and provide a percentage of the total for each species. In addition, the sponsor will provide a report detailing the hydrologic disturbances that need attention and provide a work plan identifying work necessary to accomplish hydrologic restoration.

B. As-Built Report

An as-built report will be submitted to CEMVN within 60 days following completion of all work required to restore or enhance special aquatic sites. The as-built report will describe in detail the work performed and provide a list of species planted, the number of each species, and the wetland rating. No deviation from the Mitigation Work Plan may occur without prior approval from the IRT. The as-built report will include a discussion of the coordination with IRT members, a description of and reasons for any approved deviation. The as-built report shall provide:

- a. A survey showing finished grades and plantings with written documentation, plan view and cross sectional drawings of all construction and establishment work implemented on the bank.
- b. Survey data collected from the permanent monitoring stations and the transects. This survey data should include the number of species planted, timing of all work events, and maps showing the location (including latitude/longitude) of all monitoring stations as described in this Work Plan.
- c. Detailed descriptions of site preparation, planting procedures, etc.

C. Fire Management Reporting

For burn events, the following information will be reported in the as-built, initial, interim and long-term monitoring reports: dates of burn, percentage coverage burn by unit,

and a map showing the location of the area burned. This information will also be provided on any reports subsequent to the long-term monitoring report.

D. Initial Success Criteria Report

The Sponsor shall submit the following at the end of the first year after planting.

The Sponsor shall provide details in accordance with Section VIII.A. Of this Mitigation Work Plan, on any maintenance/management work conducted on the Bank after submission of the As-Built Report. The Sponsor shall provide a brief description of any anticipated maintenance/management work to be conducted prior to attainment of interim success criteria.

1. Vegetation

a. Permanent Monitoring Plot Data

The Sponsor shall provide plot data summarized in tabular form for general vegetation monitoring plots and seedlings survival/growth monitoring plots as described and as established in accordance with Section IX. B. of this Mitigation Work Plan.

A description of the general condition of the seedlings, including the number and species of surviving seedlings in each monitoring plot, and a discussion of likely causes of mortality for the non-survivors, and a description of the generalized degree and distribution of exotic/invasive species will also be provided. This vegetative monitoring data will be compared to baseline data to demonstrate rehabilitation and/or maintenance of the pine flatwoods/savanna and related habitats.

2. Hydrologic Data

The Sponsor shall provide a description of the condition of any applicable hydrology altering features (culverts, ditches, plugs, etc.), a general discussion of hydrologic conditions at monitoring stations and date(s) of activities documentation (fire and road side berm restoration which will be returned to natural grade) demonstrating unimpeded sheet flow.

3. Photographs

The Sponsor must submit digital photographs in accordance with section IX.E. of this Mitigation Work Plan.

4. Qualitative Analysis

The Sponsor must provide a qualitative analysis of the site as described in IX.F. of this Mitigation Work Plan.

5. Fire Management Report

A summary Fire Management Report will be provided with the Initial Success Criteria Report in accordance with specifications given in Section X.C.

6. Funding

The Sponsor shall provide CEMVN with copies of the most recent financial account statements for both the financial assurance accounts and the Long-term Maintenance and Protection Fund. If any escrowed funds were used, the Sponsor will include a narrative describing that use, the justification for that use and supporting documentation (e.g. receipts). The Sponsor shall also provide any justification for any requested release from financial assurance accounts.

Should this report indicate that the initial success criteria were not attained; the report will include an Adaptive Management Plan (see Section XII.) that indicates the problems(s) and a plan of action on solving the problems.

E. Interim Success Criteria Report

The Sponsor shall monitor the Bank seedling survival/growth monitoring plots for a minimum of three consecutive years after initial success criteria have been achieved and will monitor the general vegetation plots on the third year after initial success criteria have been achieved. The sponsor will provide a summary report that documents the attainment of the interim success criteria as described in Section VIII.B.

1. Vegetation

Vegetation monitoring data (see Section IX.B.) will be provided. In addition, documentation will be provided on the percentage of seedling survival and increase in growth of planted seedlings. This vegetative monitoring data will be compared to the initial success criteria report to demonstrate rehabilitation and/or maintenance of the pine flatwoods/savanna and related habitats.

a. Permanent Monitoring Plot Data

The Sponsor shall provide plot data summarized in tabular form for general vegetation monitoring plots and seedlings survival/growth monitoring plots as described and as established in accordance with Section IX.B of this Mitigation Work Plan. Documentation will be provided that shows seedling growth has occurred for 3 consecutive years for the minimum number of seedlings per acres as specified in Section VIII.B.2. above A description of the general condition of the longleaf seedlings, including the number and species of surviving seedlings in each monitoring station, the tag number (if appropriate) and a discussion of likely causes of mortality for the non-survivors will be provided. In addition, a description of the generalized degree and distribution of undesirable species and whether they are seed bearing trees or seedlings will also be provided.

2. Hydrologic Data

By Year 3, two years following attainment of the one-year survivorship criteria, the Sponsor **must provide a Corps issued wetland determination**. The Sponsor shall submit a wetland delineation report and a request for a jurisdictional determination to CEMVN as described in the 1987 Manual as well as the November 2010 Regional Supplement to the Corps of Engineers wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2. Hydrologic restoration information will also include photographic documentation (fire break and road side berm restoration) demonstrating unimpeded sheet flow.

3. Photographs

The Sponsor must submit digital photographs in accordance with section IX.E. of this Mitigation Work Plan.

4. Qualitative Analysis

The Sponsor must provide a qualitative analysis of the site as described in IX.F. of this Mitigation Work Plan. The Sponsor shall provide details on any maintenance/management work conduction on the Bank after submission of the Initial Success Criteria Report. The Sponsor shall provide a brief description of any anticipated maintenance/management work to be conducted prior to attainment of long-term success criteria. Note: By year 5, four years following successful attainment of the one-year survivorship criteria, the developing community must exhibit characteristics and diversity indicative of a viable native pine flatwoods/savanna wetland community commensurate with stand age and site conditions; the Bank and the perimeter will be virtually free (approximately 5% or less on an acre-by-acre basis) of exotic/invasive vegetation.

5. Fire Management Reports

Criteria Report in accordance with the specifications given in Section X.C. A summary Fire Management Reports will be provided with the Interim Success

6. Funding

The Sponsor shall provide CEMVN with copies of the most recent financial account statements for both the financial assurance accounts and the Long-term Maintenance and Protection Fund. If any escrowed funds were used, the Sponsor will include a narrative describing that use, the justification for that use and supporting documentation (e.g. receipts). The Sponsor shall also provide any justification for any requested release from financial assurance accounts.

F. Long Term Success Criteria Report

The Sponsor shall monitor the Bank five years following attainment of the interim success criteria for the Bank, and every five years thereafter. This long term success

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criteria report will document the attainment of the long term success criteria as described in Section VIII.C. Should information in any of these reports indicate that the long-term success criteria are not attained, an Adaptive Management Plan (see Section XII.) should be submitted to CEMVN. This plan should identify and describe the problem(s) and provide a plan of action on solving these problems.

1. Vegetation

The vegetative monitoring data will be compared to the interim success criteria report to demonstrate rehabilitation and/or maintenance of the pine flatwoods/savanna and related habitats.

a. Permanent Circular Plot Data

The Sponsor shall provide plot data in tabular form for each permanent circular monitoring plot as described and as established in accordance with Section IX.B of this Mitigation Work Plan. A description of the generalized degree and distribution of exotic/invasive species and whether they are seed bearing trees or seedlings will also be provided.

2. Hydrologic Data

The Sponsor must provide documentation to verify that the restored hydrology of the site as achieved in the Interim Success Criteria is still in place.

3. Photographs

The Sponsor must submit digital photographs in accordance with section IX.E. of this Mitigation Work Plan.

4. Qualitative Analysis

The Sponsor must provide a qualitative analysis of the site as described in IX.F. of this Mitigation Work Plan. The Sponsor shall provide details on any maintenance/management work conducted on the Bank after submission of the Interim Success Criteria Report.

5. Fire Management Reports

Fire Management Reports will be provided for each burn event (see Section X.C.)

6. Funding

The Sponsor shall provide CEMVN with copies of the most recent financial account statements for both the financial assurance accounts and the Long-term Maintenance and Protection Fund. If any escrowed funds were used, the Sponsor will include a narrative

describing that use, the justification for that use and supporting documentation (e.g. receipts). The Sponsor shall also provide any justification for any requested release from financial assurance accounts.

G. Beyond Long-term Success Criteria Report

The Sponsor shall monitor the Bank five years following attainment of the long-term success criteria for the Bank, and every five years thereafter. This long-term success criteria report will document the maintenance of the long term success criteria as described in Section VIII.C. Should information in any of these reports indicate that the long-term success criteria is no longer met, an Adaptive Management Plan (see Section XII.) should be submitted to CEMVN. This plan should identify and describe the problem(s) and provide a plan of action on solving these problems.

1. Vegetation

The vegetative monitoring data will be compared to the long-term success criteria report to demonstrate rehabilitation and/or maintenance of the pine flatwoods/savanna and related habitats.

a. Permanent Circular Plot Data

The Sponsor shall provide plot data in tabular form for half of the number of permanent circular monitoring plots as described and as established in accordance with Section IX.B of this Mitigation Work Plan. A description of the generalized degree and distribution of exotic/invasive species and whether they are seed bearing trees or seedlings will also be provided.

2. Hydrologic Data

The Sponsor must provide documentation to verify that the restored hydrology of the site as achieved and shown for Long-term Success Criteria is still in place.

3. Photographs

The Sponsor must submit digital photographs in accordance with section IX.E. of this Mitigation Work Plan.

4. Qualitative Analysis

The Sponsor must provide a qualitative analysis of the site as described in IX.F. of this Mitigation Work Plan. The Sponsor shall provide details on any maintenance/management work conducted on the Bank after submission of the Interim Success Criteria Report.

5. Fire Management Reports

Fire Management Reports will be provided for each burn event (see Section X.C.)

6. Funding

The Sponsor shall provide CEMVN with copies of the most recent financial account statements for both the financial assurance accounts and the Long-term Maintenance and Protection Fund. If any escrowed funds were used, the Sponsor will include a narrative describing that use, the justification for that use and supporting documentation (e.g. receipts). The Sponsor shall also provide any justification for any requested release from financial assurance accounts

XI. Bank Credits

A. Credit Determination

Refer to Attachment MWP-D for credit calculation for Section 1 of CBMB using the Louisiana Wetland Rapid Assessment Method (LRAM) Version 2. Please note that the proposed credit calculation for Section 2 of CBMB will be submitted with the Section 2 MBI and WP.

B. Schedule of Credit Availability

Upon submittal of all appropriate documentation by the Sponsor, and subsequent approval by CEMVN in consultation with the IRT, CEMVN will release credits for use by the Sponsor according to the following schedule:

1. Thirty percent (**30%**) of total anticipated project credits for Section 1 will be available for debiting upon confirmation that all items in Section XI. F (1-7) of the MBI have been completed.
2. An additional twenty percent (**20%**) of the total anticipated credits for Section 1 will be available for debiting upon providing documentation that the vegetative plantings and of the work necessary to restore site topography and wetland hydrology of the Bank have been completed, as outlined in Section VI. of this Work Plan
2. An additional twenty percent (**20%**) of total anticipated credits for Section 1 will be available for debiting upon successfully completing the Initial Success Criteria as described in Section VIII.A.
3. An additional twenty percent (**20%**) of the total anticipated credits for Section 1 would be released upon successfully completing the Interim Success Criteria in Section VIII.B.

4. An additional twenty percent (10%) of the total anticipated credits for Section 1 would be released upon successfully completing the Long-Term Success Criteria in Section VIII.C. are met

XII. Adaptive management plan

If the compensatory mitigation project cannot be constructed in accordance with the approved mitigation plans, or if monitoring reveals that certain success criteria have not been met, the Sponsor shall provide written notification to CEMVN within 2 weeks of the discovery of the deficiencies and provide detailed written information on the deficiencies and the proposed methodologies for rectifying these deficiencies in the form of an Adaptive Management Plan (AMP), to be reviewed and approved by CEMVN in conjunction with the IRT.

Some possible deficiencies may include:

- Vegetation survival falls below target survival criteria.
- Other target parameters detailed in the success criteria are not met.
- Hydrology is not achieved.
- Work is not meeting time frames as described in the work plan

A. Contingencies for Vegetation

If longleaf pine seedling survival falls below the target survival criteria or if other target parameters detailed in the success criteria are not met, the Sponsor shall identify and address the cause or causes. In the case of longleaf pine planting failure, replanting to achieve the desired coverage parameters will be conducted at the earliest opportunity after determining and addressing the cause(s) of failure. Replanting, monitoring and reporting, as previously described, shall occur as needed to achieve and document the required survival rate. No additional credits will be released until it is determined by the CEMVN that seedling replanting has achieved the required survivorship success criteria.

If tree survival criteria are not met after three attempts, CEMVN will convene a meeting of the IRT and the Sponsor to decide if replanting should continue. Should the IRT determine that achieving the required survival rate would not be likely, the IRT will reassess the Bank to determine the value of its continued use, or if a new management potential should be calculated incorporating the new conditions.

If other vegetation parameters detailed in success criteria are not met, a plan to rectify the situation must be submitted to CEMVN/IRT for approval.

B. Contingencies for Hydrology

If wetland hydrology is not achieved within three years of the completion of construction, the Sponsor shall document in the monitoring report those areas where attention is needed. The Sponsor will submit a remedial action plan by which it proposes to achieve wetland hydrology in those areas that are not determined to be jurisdictional. Should CEMVN and

ATTACHMENT C: MITIGATION WORK PLAN
FOR PINE FLATWOODS/SAVANNA HABITAT
CANE BAYOU MITIGATION BANK

the IRT determine that achieving the required hydrology would not be likely, the IRT will reassess the Bank to determine the value of its continued use, or if a new management potential should be calculated incorporating the new conditions.

XIII. Long Term Protection and Maintenance

To ensure long-term sustainability of the resource, the Sponsor shall burden the property with a perpetual conservation servitude as described in Section X of this MBI.

XIV. Funding

Section IX. A of this MBI provides specific details about the funding for the Construction and Establishment (C & E) Activities for Sections of the Bank. St. Tammany Parish Government will establish an Escrow Account for the Construction and Establishment Costs of the Bank for Section 1. The Parish will also establish a Long-Term Maintenance and Protection Escrow Account for the preservation, enhancement and maintenance of Section 1 of the Bank or in the event Stewardship is transferred to a third party.” St. Tammany Parish Government will establish an Escrow Account for the Construction and Establishment Costs of the CBMB, as well as a Long-Term Maintenance and Protection Escrow Account, for Section 2 of the CBMB when the mitigation work plan for Section 2 is approved by CEMVN.

A. Construction and Establishment (C&E) Funds

1. Estimate of C & E Funds Required

Section 1 Construction and Establishment costs for the first fifteen years have been estimated by identifying costs (based upon mitigation banking experience) associated with individual tasks necessary to construct, establish, maintain, manage, and monitor the Bank (Attachment MWP-C, Table 1). These costs are then broken down by year (see Attachment MWP-C, Table 2 of this Mitigation Work Plan). Funding amounts have been adjusted for inflation every five years based on the Consumer Price Index.

The total estimated costs of Construction and Establishment of the Bank is \$860,116.00 which is comprised of \$269,911.00 for Construction (Year 1) and \$590,205.00 for Establishment (Years 2-15 adjusted for inflation), Table 1b & 1c to this Mitigation Work Plan. A detailed listing of activities and inflation adjusted costs required for Construction and Establishment is included in Attachment MWP-C, Table 2 to this Mitigation Work Plan.

2. C&E Funding Mechanism

To Fund this account the Sponsor (St. Tammany Parish) proposes to establish a legislatively authorized Escrow Account totaling \$860,116.00.

3. C & E Release Schedule

The Financial Assurances shall be reduced as success criteria are achieved and the probability decreases that those funds would be needed according to the following schedule.

1. Upon Verification that all hydrologic modifications, construction and planting as described in this Mitigation Work Plan (Attachment C of the MBI) have been completed to the satisfaction of CEMVN, in consultation with the IRT. CEMVN shall advise the Sponsor and the financial institution that the C & E financial assurance may be reduced to \$590,205 (\$860,116 - \$269,911).
2. Upon verification by CEMVN, in consultation with the IRT, that the initial success criteria have been attained for all tracts to the satisfaction of CEMVN, in consultation with the IRT. CEMVN shall advise the Sponsor and the financial institution that the C & E financial assurance may be reduced to \$423,661 (\$590,205 - \$166,544).
3. Upon verification by CEMVN in consultation with the IRT, that the interim success criteria have been attained for all tracts to the satisfaction of CEMVN, in consultation with the IRT. CEMVN shall advise the Sponsor and the financial institution that the C & E financial assurance may be reduced to \$257,061 (\$423,661 - \$166,600).
4. Upon verification by CEMVN, in consultation with the IRT, that the long-term success criteria have been attained for all tracts to the satisfaction of CEMVN, in consultation with the IRT. CEMVN shall notify the Sponsor and the financial institution that the remaining C & E financial assurance may be released to the Sponsor.

Table 9. CBMB Section 1 C&E Financial Assurances Reduction Schedule

Management Type	Beginning Value	Construction Complete	Initial Success	Interim Success	Long Term Success
Wet Pine Flatwoods/ Savanna and Buffer	\$860,116				
<i>Anticipated Reduction Amount</i>		<i>(\$269,911)</i>	<i>(\$166,544)</i>	<i>(\$166,600)</i>	<i>(\$257,061)</i>
<i>Balance After Reduction</i>	<i>\$860,116</i>	<i>\$590,205</i>	<i>\$423,661</i>	<i>\$257,061</i>	<i>\$ 0</i>

B. Long Term

Maintenance/Management Funds

1. **Long-term Management Needs** Long-term management strategy and a long-term management plan are summarized as follows:

ATTACHMENT C: MITIGATION WORK PLAN
FOR PINE FLATWOODS/SAVANNA HABITAT
CANE BAYOU MITIGATION BANK

- Undesirable brush and invasive species control. Because prescribed fire does not completely control all undesirable vegetation, the long-term management plan includes funding for treating 10% of the bank each year, so that all areas are treated at least once every 10 years.
- Prescribed burning. An effort will be made to burn every other year, with a minimum of burning on the order of once every 1 – 3 years. Due to common weather constraints, we estimate an average of burning 44% of the bank each year and have based the long-term management fund as such.
- Vegetation monitoring and reporting. A portion of the permanent general vegetation plots will be monitored every five years with data collected and reported to CEMVN.
- General Land Management. Staffing is needed to conduct or oversee the above activities plus all other issues that arise in relation to the bank.
- Boundary maintenance. Signs marking the bank boundary will be checked annually and replaced if missing or damaged.
- Road maintenance. Reconnaissance of conditions of Log Cabin and the Elevated Woods Roads will be conducted annually, with repairs conducted as needed. Repairs would include grading and adding gravel.
- Hydro- maintenance. Reconnaissance of hydrologic conditions of low water crossings and plugged ditches will occur annually, with repairs conducted as needed. Repairs would include grading and addition of rock for the crossings, and additional fill (from off-site) or slash (woody debris) to re-plug ditches.
- Miscellaneous/Contingencies. With the best of planning, preparation is still needed to cover small, miscellaneous tasks or unforeseen work that will inevitably arise.

2. Annual Cost Estimates for Long-Term Needs

The cost of long-term management is \$25,431 per year from year 16 to 50 (Attachment MWP-C, Table 3). This amounts to \$1,847,389 when adjusted for inflation every five years (Attachment MWP-C, Table 4). Table 3 contains a description of the necessary annual work and an itemization of costs to perform the work for long-term management and protection of the Bank.

3. Long-Term Maintenance and Protection Funding Mechanism

To ensure that sufficient funds are available to provide for the perpetual maintenance and protection of the Bank, the Sponsor is establishing the "Long-Term Maintenance and Protection Escrow Account". This Account will be administered by a federally insured deposit that is "well capitalized" or "adequately capitalized" as defined in Section 38 of the Federal Deposit Insurance Act.

The Account will be incrementally funded by depositing a minimum of \$6,000.00 into the Account per credit/acre sold/used at the time of credit sale/use (Attachment MWP-C,

ATTACHMENT C: MITIGATION WORK PLAN
FOR PINE FLATWOODS/SAVANNA HABITAT
CANE BAYOU MITIGATION BANK

Table 5). The deposit value per credit/acre must reflect, at a minimum, the total fund value divided by not more than 90% of the anticipated credits.

Once the Account is fully funded (\$1,650,000.00) no incremental fund per credit/acre sale/use is required. The account shall be fully funded by the time 70% of the total number of credits are sold/used or upon successful achievement of the Long-Term Success Criteria whichever occurs first. If the Long-Term Success Criteria are met prior to fully funding the escrow account then the Sponsor must deposit into the escrow account the difference between the amount determined to be full funding and the account balance. Documentation that the account is fully funded is a pre-requisite for release of the remaining credits following attainment of the Long-Term Success Criteria as identified in this Mitigation Work Plan. Accrued interest in the excess of the value of the fully funded account may only be used for the administration, operation, maintenance and/or other purposes that directly benefit the Bank. The principal shall not be used and shall remain as part of the Bank's assets to ensure that sufficient funds are available should perpetual maintenance responsibilities be assumed by a third party. The Sponsor or Long-Term Steward may withdraw the accumulated interest only with written approval from CEMVN and may only be used to maintain the Bank. The Sponsor shall provide copies of depository account statements to CEMVN upon request and in their monitoring reports.

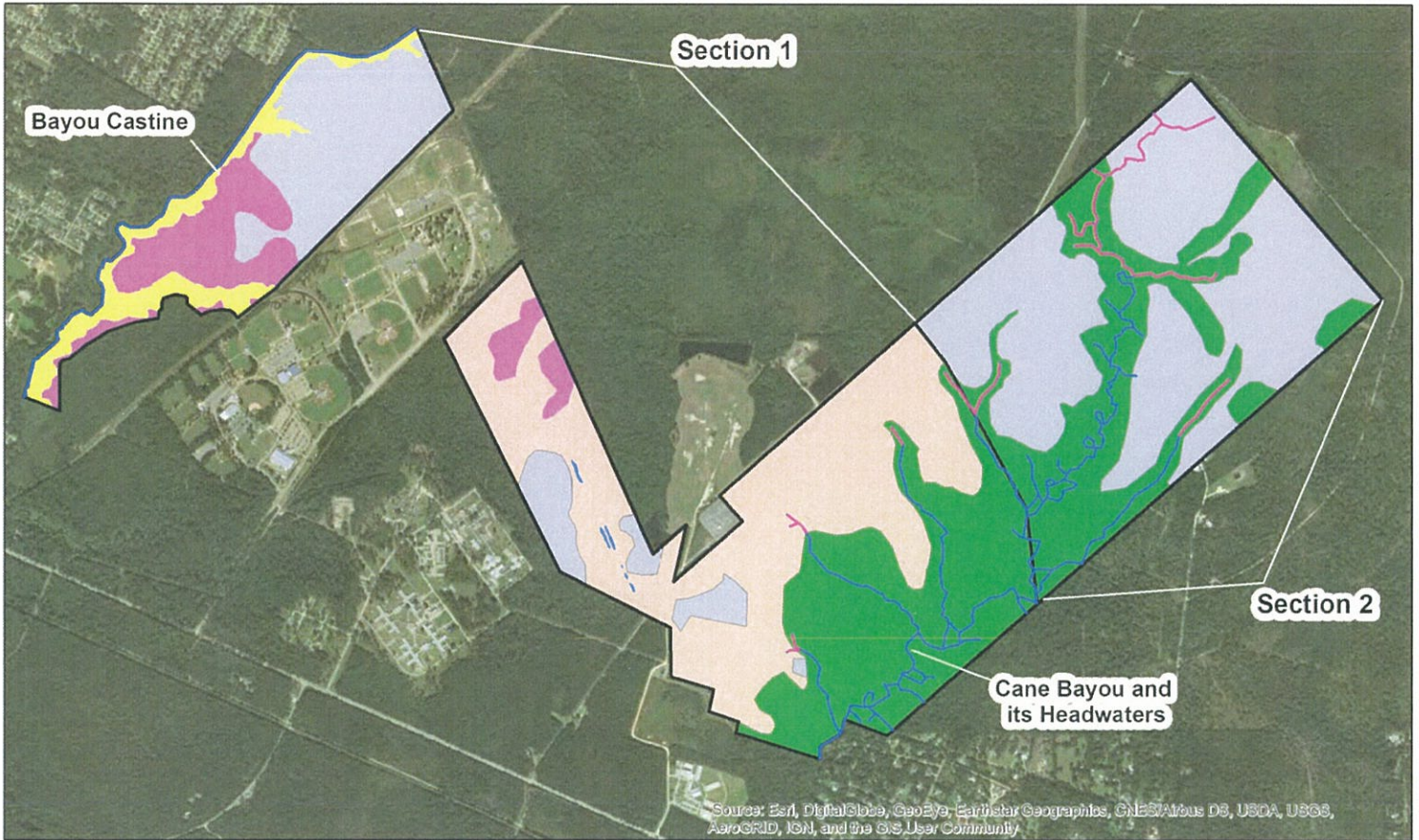
XV. Other Information

This bank is being developed in two sections. Initial Construction work needed for Section 2 is planned to start approximately one year after construction work for Section 1 is completed and pending review and approval by CEMVN in conjunction with the IRT. In addition to a proposed Section 2 restoration work plan, the Sponsor will submit appropriate financial documentation (for both Construction and Establishment Accounts and Long-Term Financial Accounts) for Section 2 for review and approval by CEMVN in conjunction with the IRT, at that time.

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

ATTACHMENT MWP - A
FIGURES/DOCUMENTS AND DRAWINGS

FIGURES 5 – 15



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

Legend	
	Cane Bayou Mitigation Bank ±1165.5 ac
	Cypress-Tupelo/Scrub-Shrub Swamp ±46.9 ac
	Other Waters/Bayhead Stringers
	Moderately Encroached Pine Savanna ±418.6 ac
	Other Waters ±9.1 ac
	Heavily Encroached Pine Savanna ±266.3 ac
	Other Waters/Ponds ±0.8 ac
	Mixed Hardwood-Loblolly Forest ±343.3 ac
	Degraded Pine Flatwood Upland ±68.4 ac

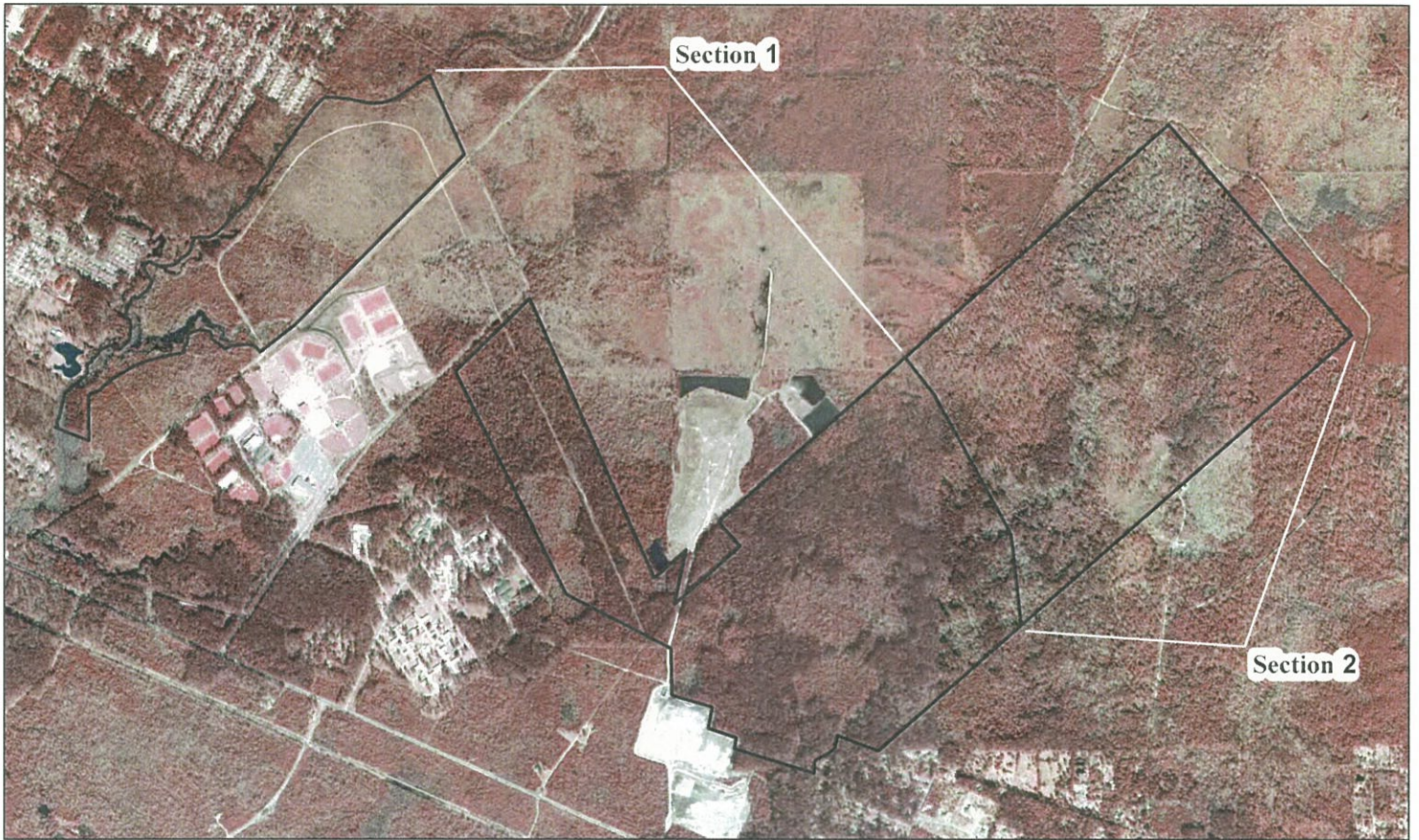
Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Current Habitat Conditions
on the Cane Bayou
Mitigation Bank
Figure 5

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: October 30, 2017

N

0 0.15 0.3 0.45
 Miles



Section 1

Section 2

Legend

 Cane Bayou Mitigation Bank

**Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana**

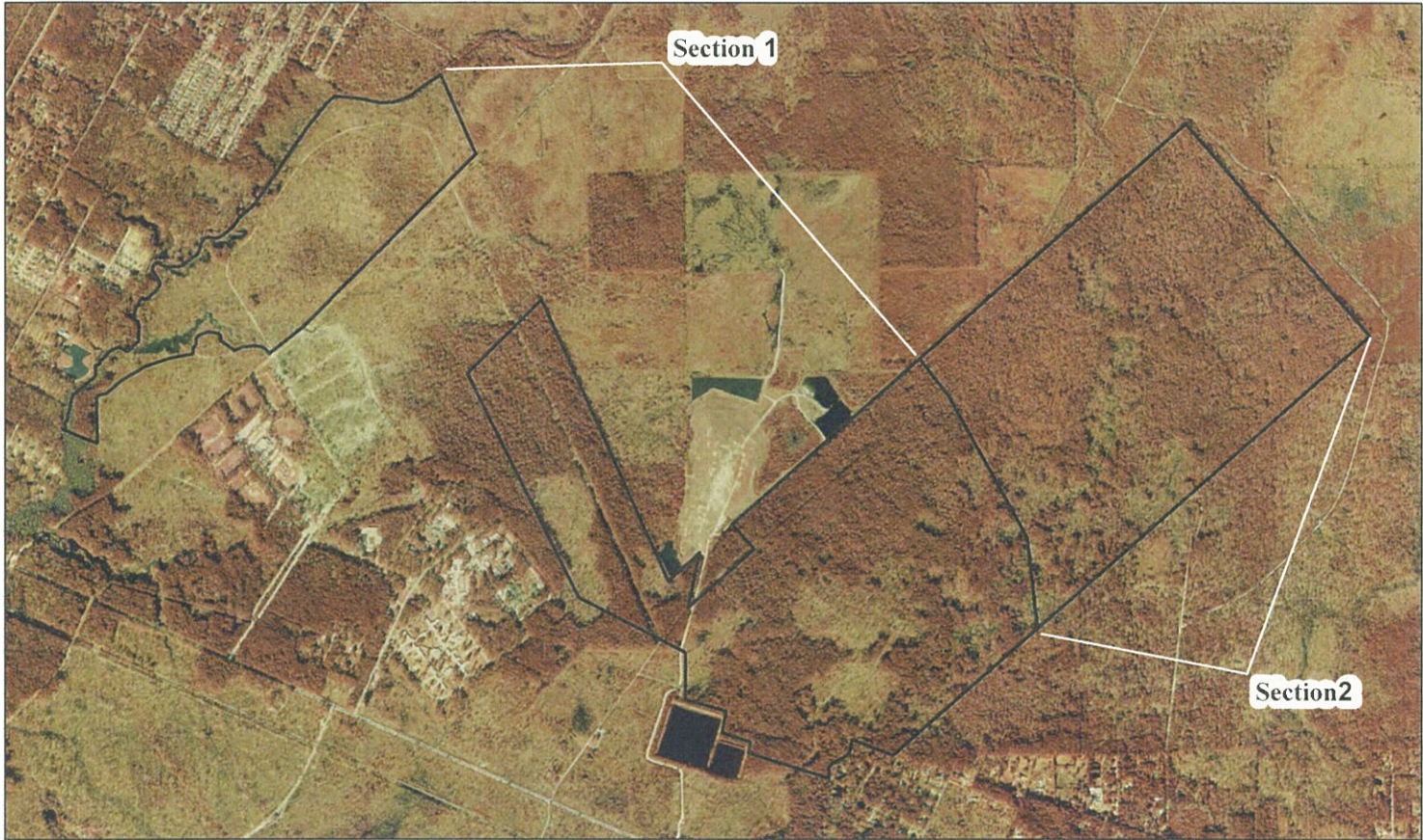
**Historical Aerial 1998
Figure 6a**

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: November 5, 2015

N




0 0.2 0.4 0.6
 Miles



Section 1

Section 2

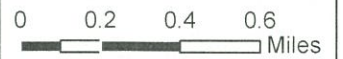
Legend

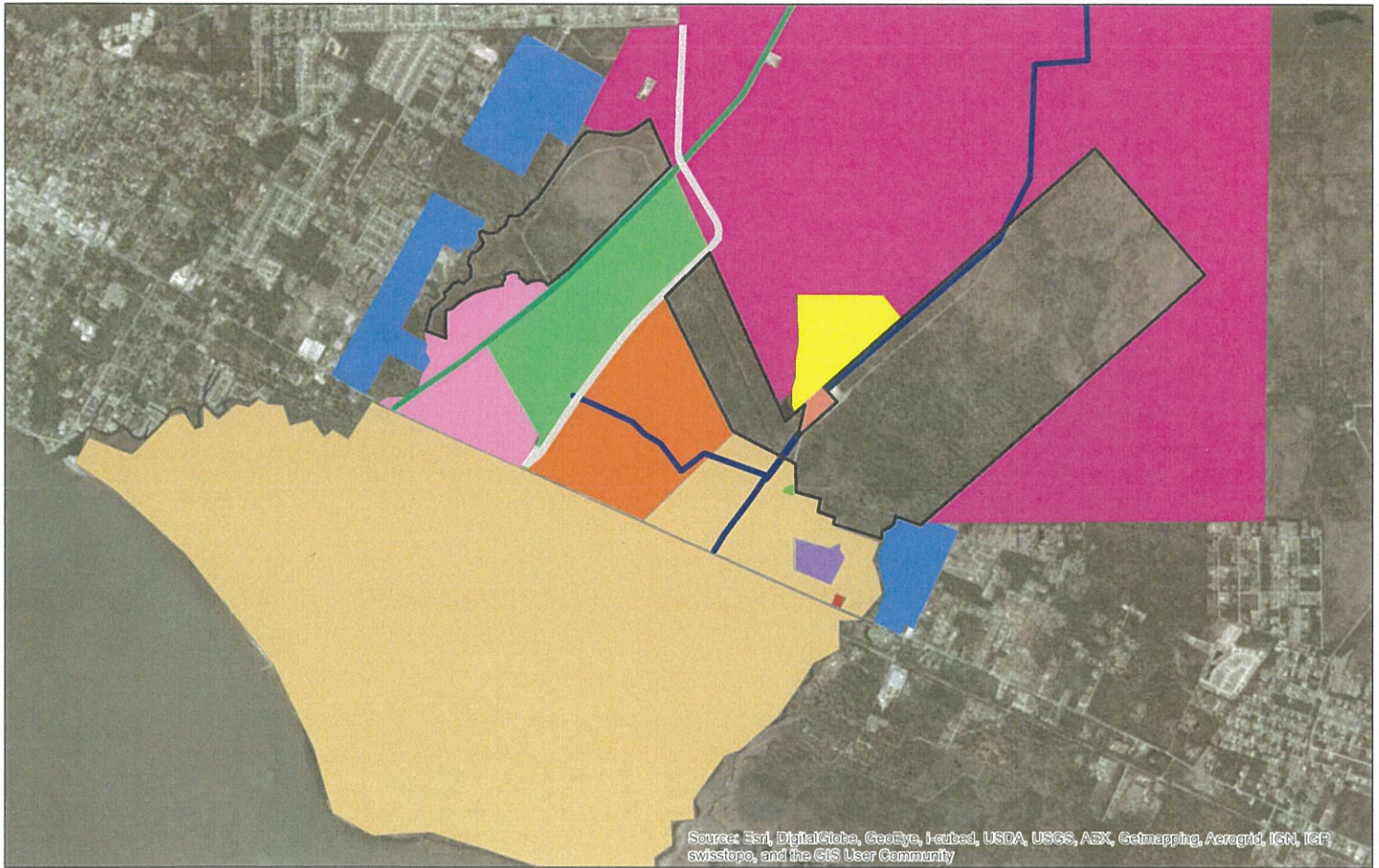
 Cane Bayou Mitigation Bank

**Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana**

**Historical Aerial 2004
Figure 6b**

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: November 5, 2015





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

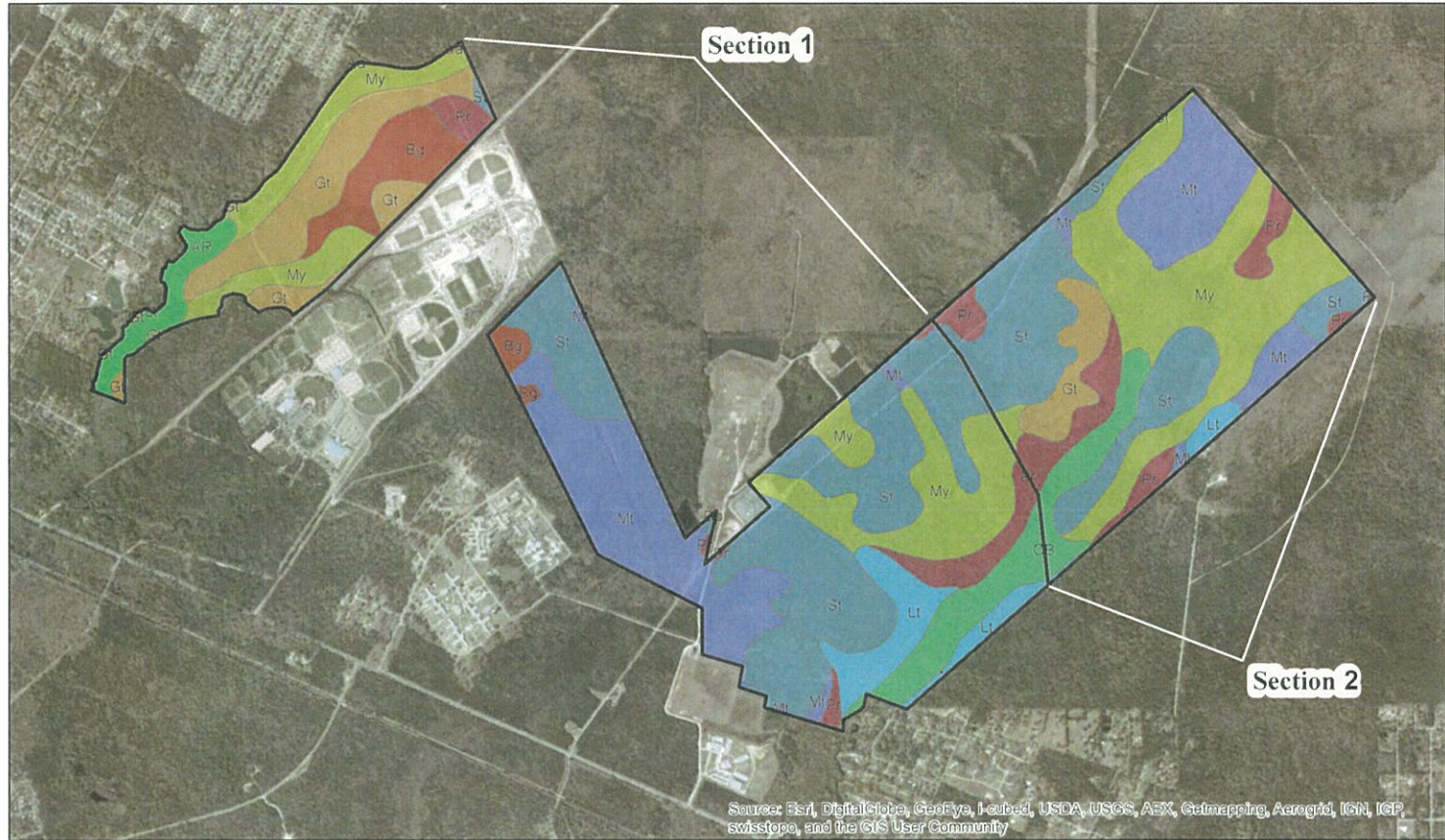
Legend					
	Cane Bayou Mitigation Bank		Abandoned Landfill Complex		Nothlake Behavioral Health System
	Sewer Treatment Plant		Gas Pipeline		Public Lands
	Electric Transfer Station		Private TimberLand		High School
	Proposed Roadway		Residential		Fire Station
	Powerline		Northlake Nature Center		Pelican Park

**Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana**

**Current Land Use
Figure 7**

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: December 29, 2015

0 0.3 0.6 0.9 Miles



Legend

	Cane Bayou Mitigation Bank		Dumps		Quachita and Bibb soils, frequently flooded
	<all other values>		Guyton silt loam		Prentiss fine sandy loam, 0 to 1 percent slopes
	Abta silt loam, 0 to 2 percent slopes		Latonia fine sandy loam		Stough fine sandy loam
	Arat silty clay loam 1/		Myatt fine sandy loam		Water
	Brimstone-Guyton silt loams		Myatt fine sandy loam, frequently flooded		

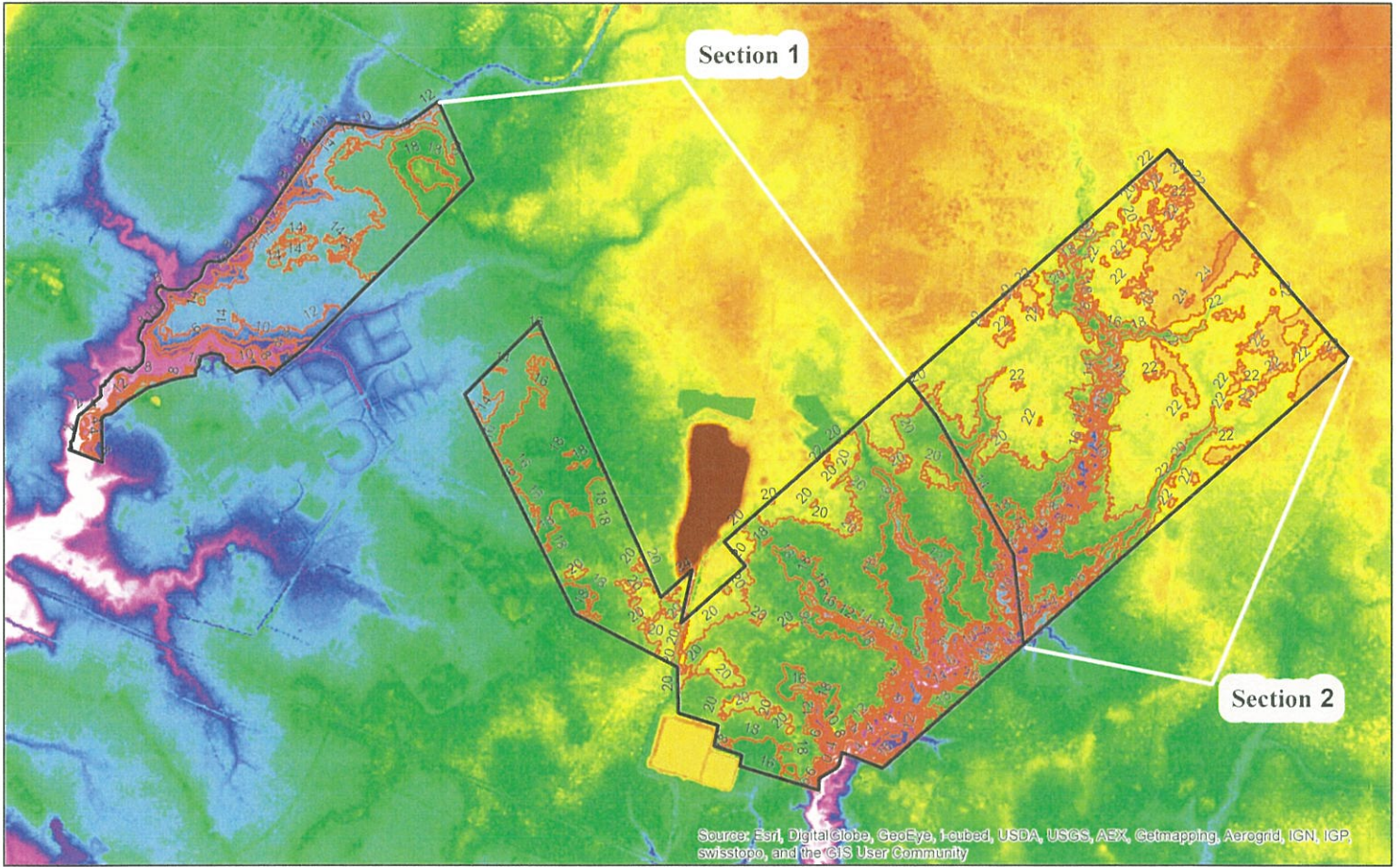
Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Soils Map
Figure 8



Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: November 5, 2015



Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AeroX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend


-  Cane Bayou Mitigation Bank
-  Contours (2-ft)

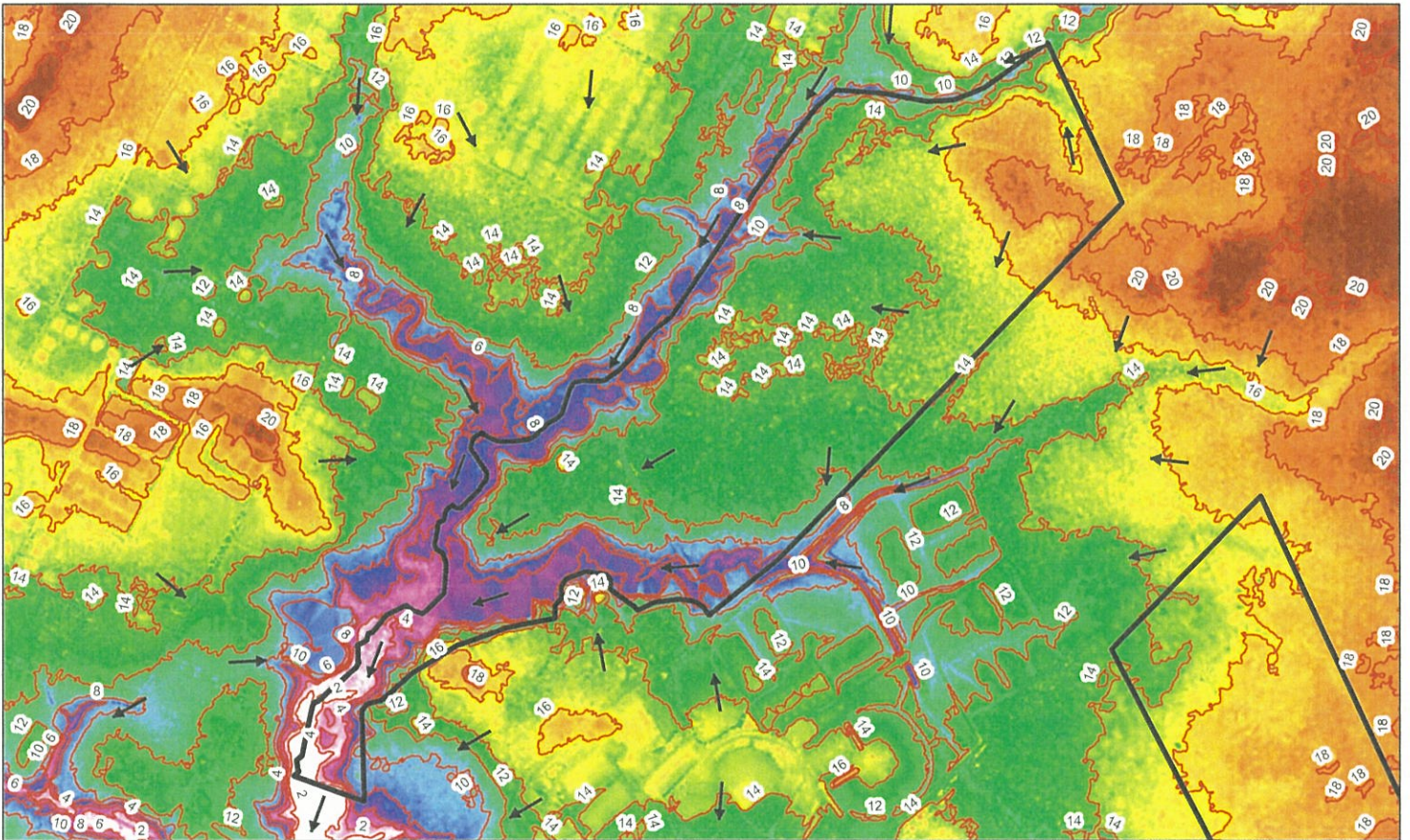
Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

Mandeville and Lacombe, LA Quadrangles
 LIDAR Map
 Figure 9



Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: November 5, 2015

0 1,300 2,600 3,900 Feet

N 



Legend


-  Cane Bayou Mitigation Bank
-  Contours (2-ft)

Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana


Pre-Impact (Historical)
 Drainage Patterns
 Figure 10a

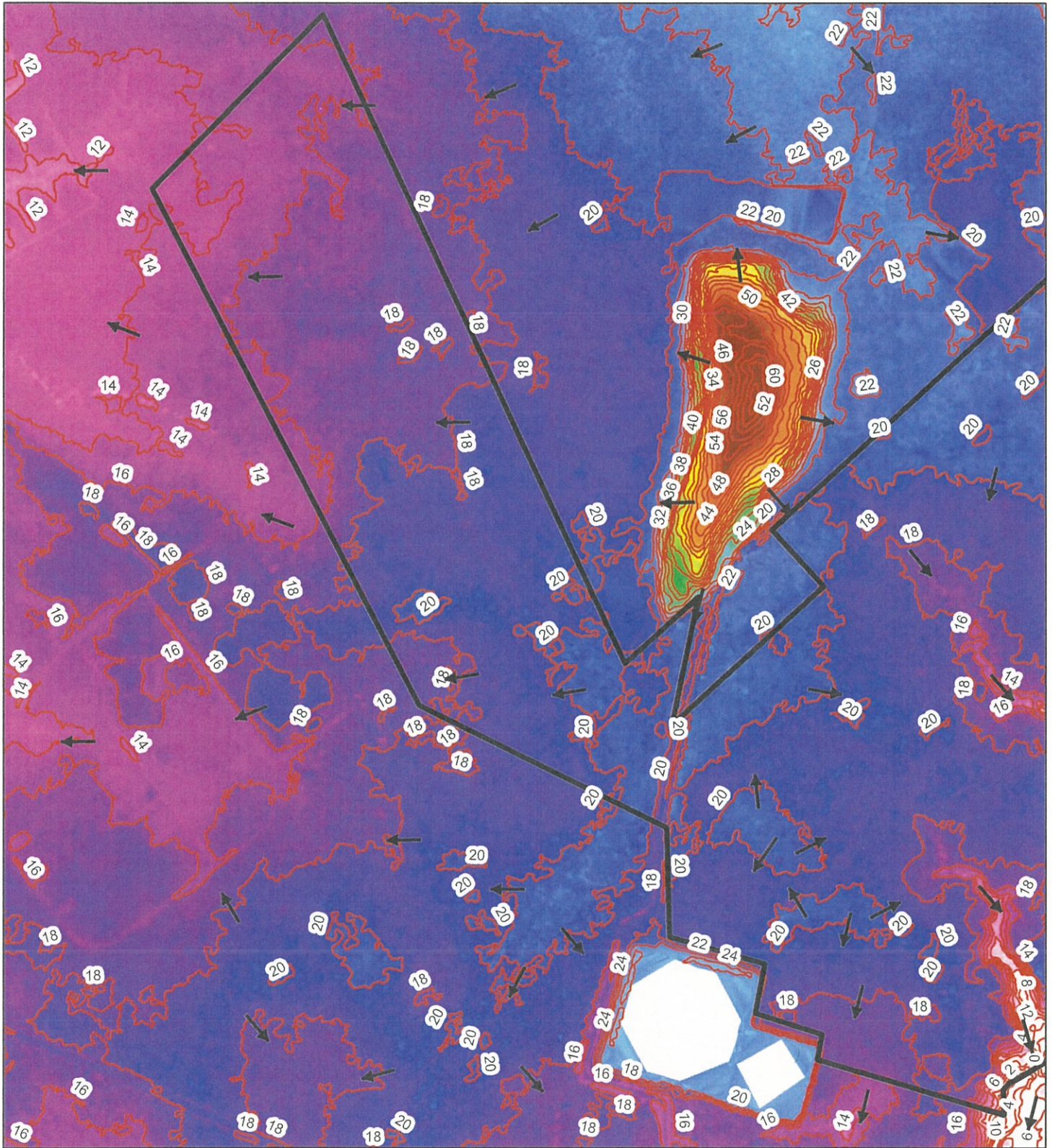
Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: November 5, 2015

N





0 590 1,180 1,770 Feet





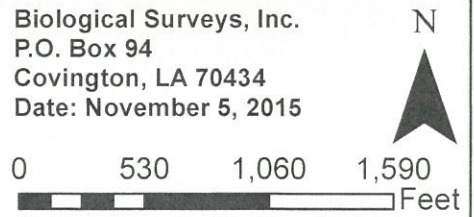
Legend

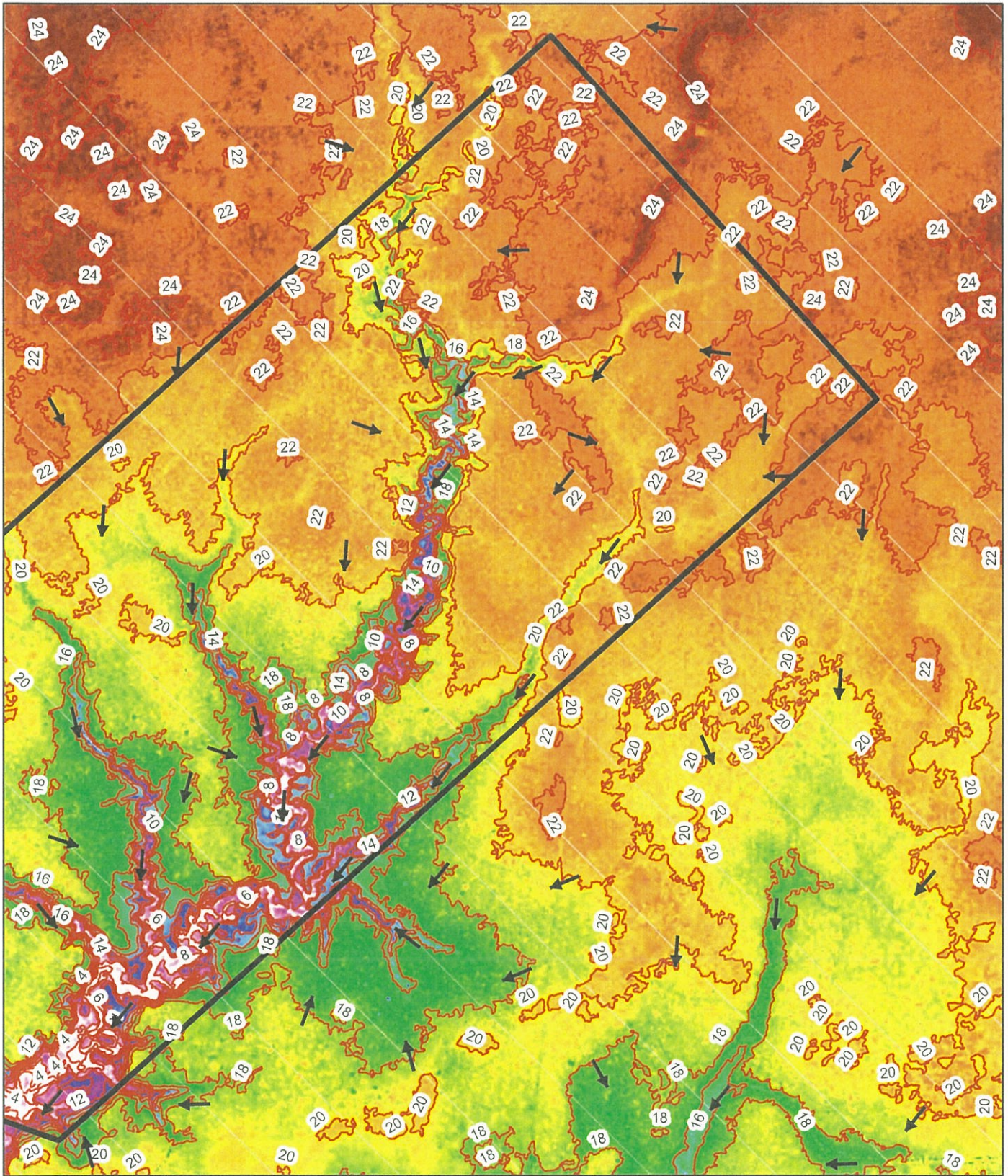
-  Cane Bayou Mitigation Bank
-  Contours (2-ft)

Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

Pre-Impact (Historical)
 Drainage Patterns
 Figure 10b

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: November 5, 2015





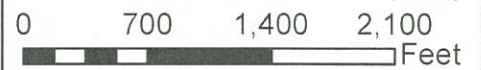
Legend

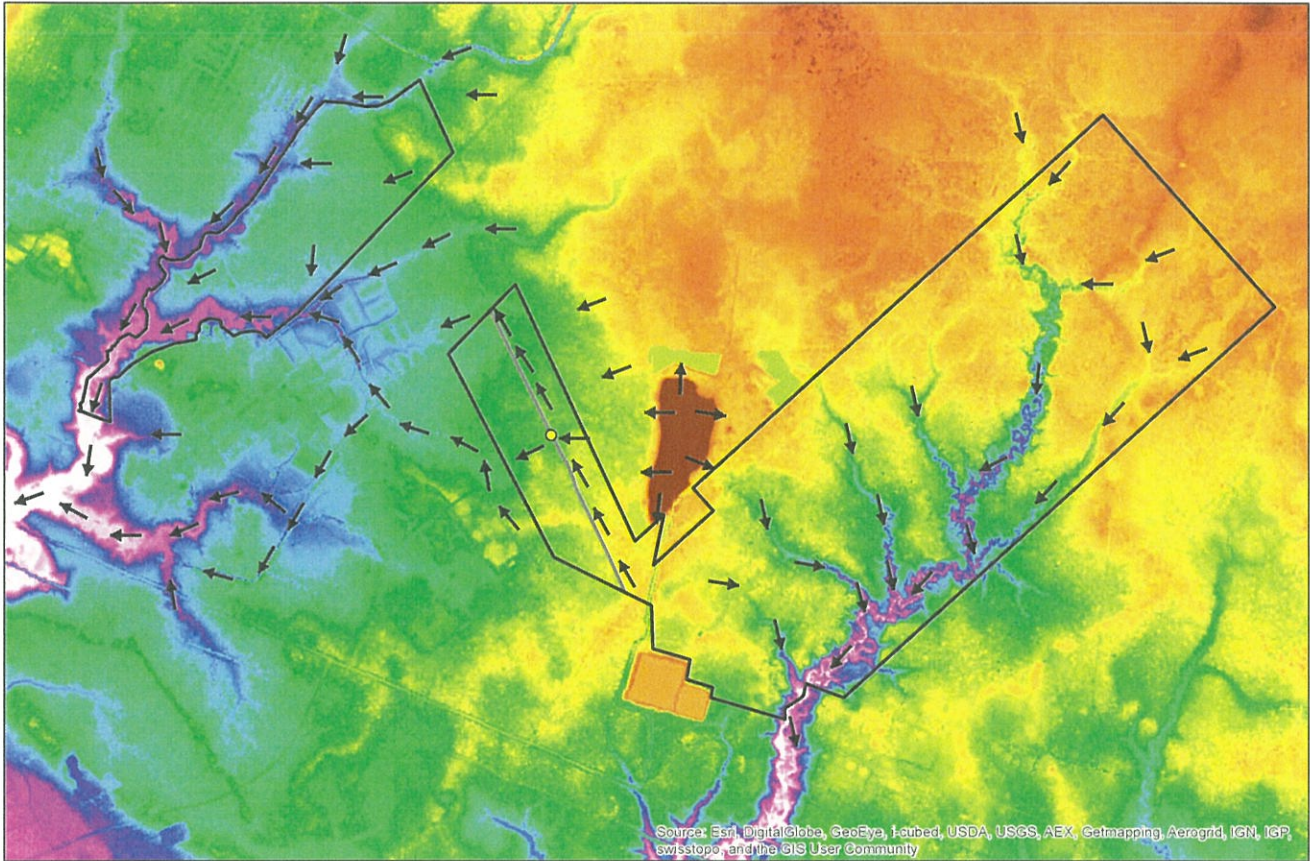
-  Cane Bayou Mitigation Bank
-  Contours (2-ft)

Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

Pre-Impact (Historical)
 Drainage Patterns
 Figure 10c

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: November 5, 2015





Legend

- Cane Bayou Mitigation Bank
- Elevated Woods Road
- Existing Culvert

Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

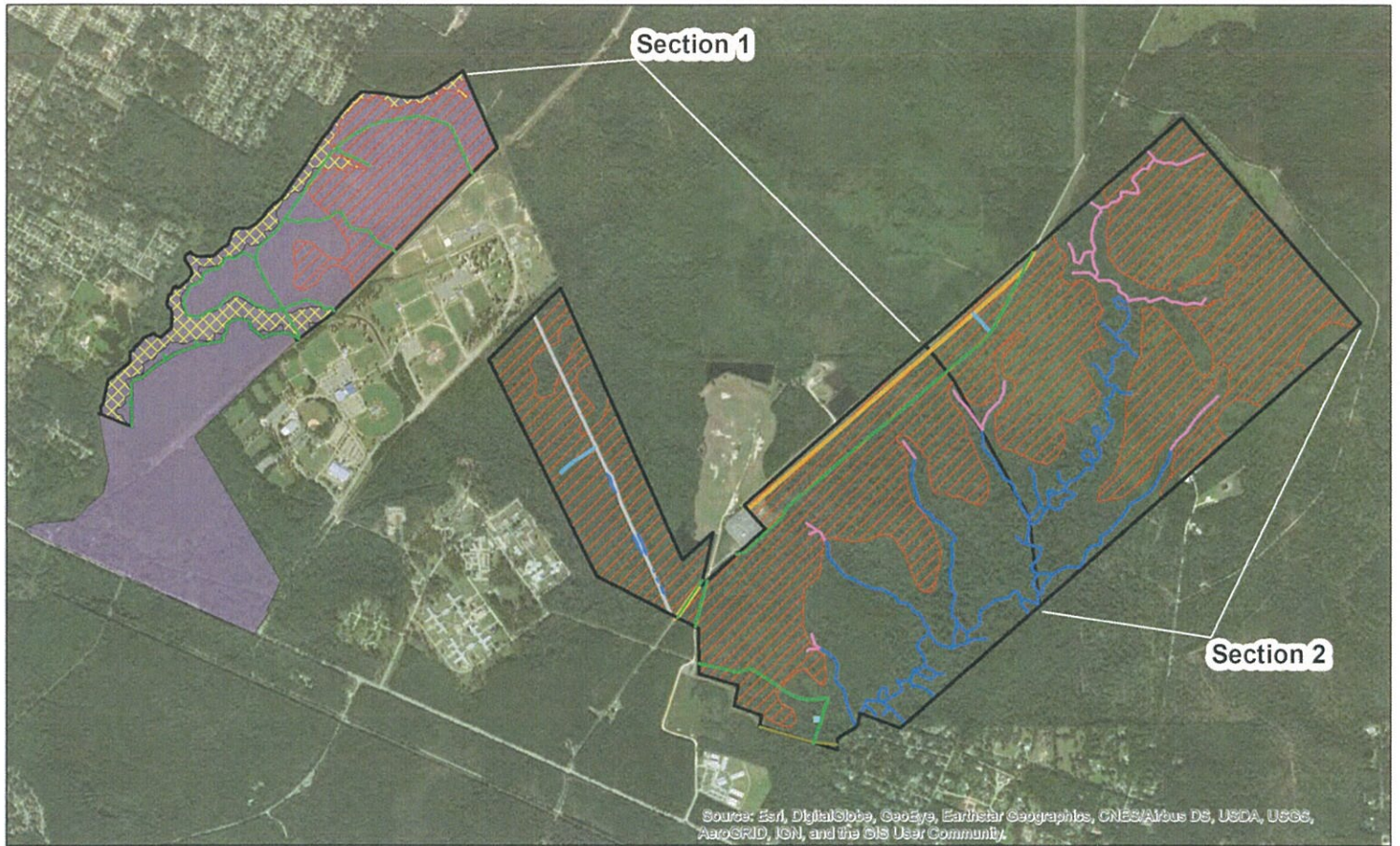
Post-Impact (Current)
 Drainage Patterns
 Figure 11

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: November 5, 2015

N

0 0.2 0.4 0.6

 Miles



Legend			
	Cane Bayou Mitigation Bank		Elevated Woods Road
	Wetlands (Pine Flatwoods/Savanna)		Roads/Main Trails
	Cypress-Tupelo/Scrub-Shrub Swamp		Sewer ROW
	Other Waters/Bayhead Stringers		Ditch (existing culvert location)
	Part of Northlake Nature Center		Ponds
	Other Waters		Powerline within Bank
	Old PumpHouse		

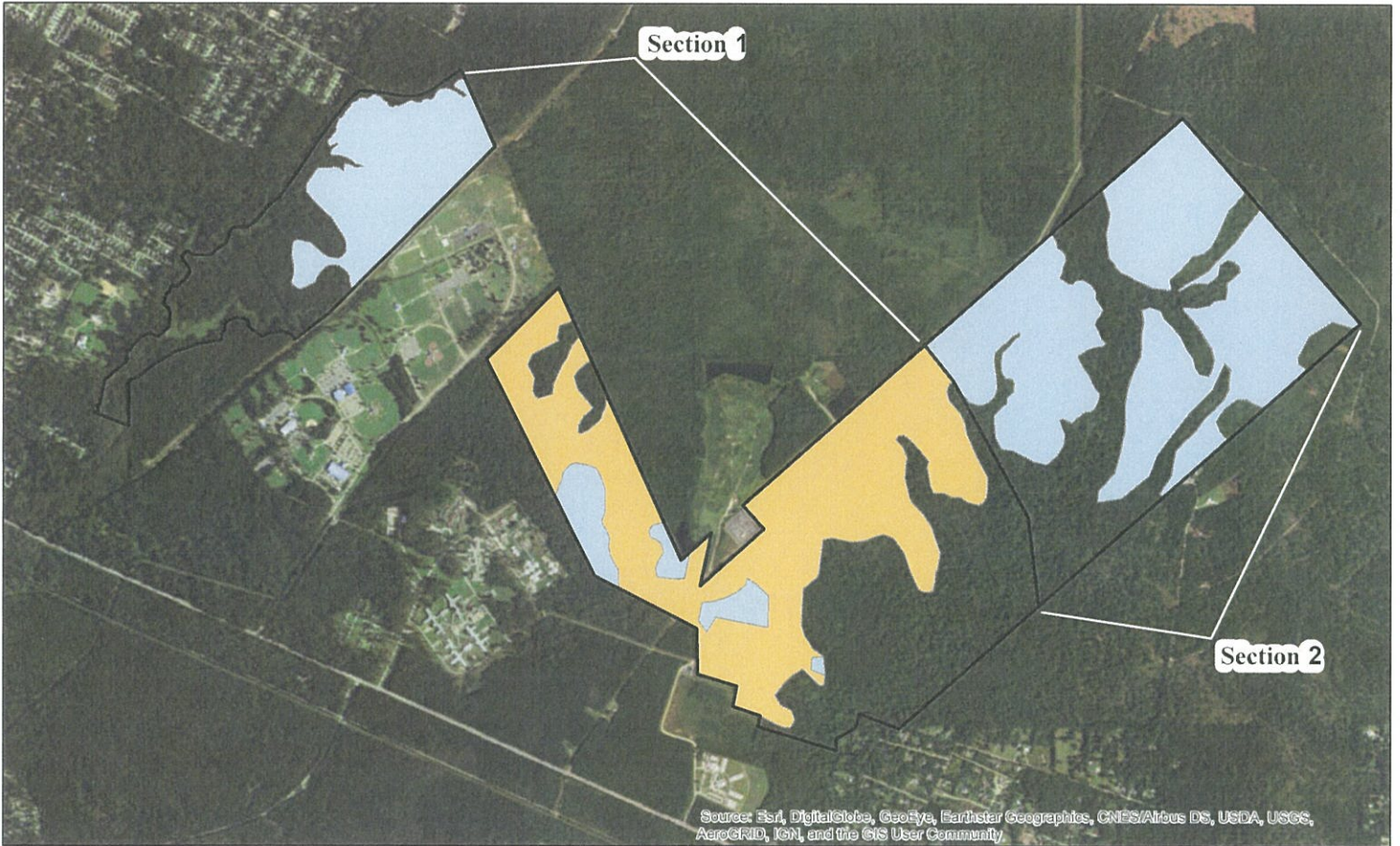
Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

Current Conditions on the
 Cane Bayou
 Mitigation Bank
 Figure 12

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: May 17, 2017




N

0 0.2 0.4 0.6
 Miles



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


Legend


-  Cane Bayou Mitigation Bank
-  Enhancement Credit Areas ±266.3 ac (Heavily Encroached Pine Flatwoods/Savanna)
-  Enhancement Credit Areas ±418.6 ac (Moderately Encroached Pine Flatwoods/Savanna)

Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Proposed Enhancement
Credit Areas Figure 12a

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: June 29, 2017

N


0 0.2 0.4 0.6
 Miles



Legend

- Cane Bayou Mitigation Bank (P1 ±707.9 ac; P2 ±457.6 ac)
- Wet Pine Savanna/Flatwoods (P1 ±394.7 ac; P2 ±290.2 ac)
- Cypress-Tupelo/Scrub-Shrub Swamp (P1 ±46.9 ac)
- Longleaf Pine Flatwood/Loblolly Pine-Hardwood Upland (P1 ±182.9 ac; P2 ±160.4 ac)
- Longleaf Pine Flatwood Upland (P1 ±68.4 ac)

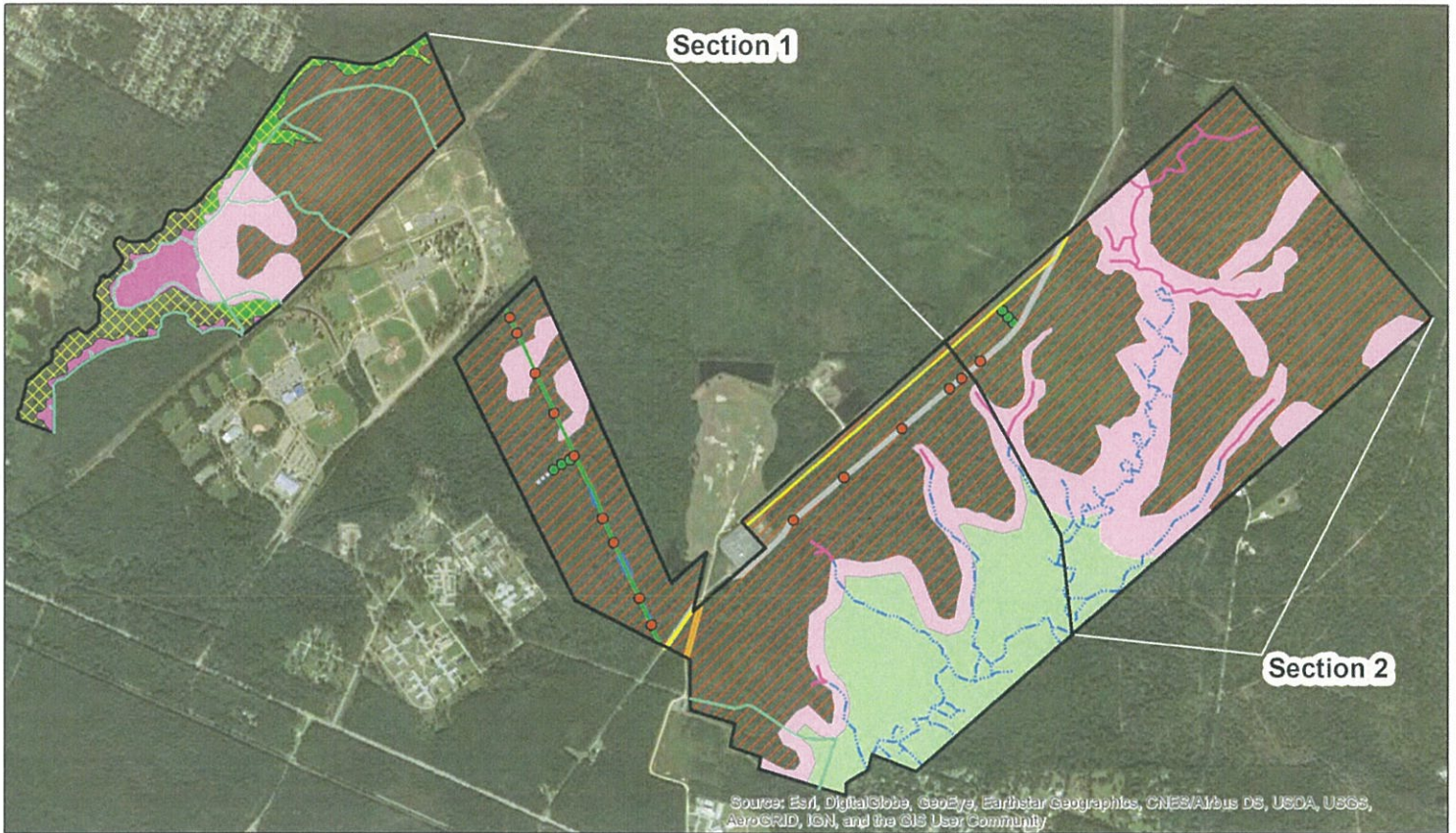
**Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana**

**Estimated Historic Habitats/
Natural Community
Restoration Plan
Figure 13**

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: December 29, 2015

N

0 0.25 0.5
Miles



Section 1

Section 2

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

Legend

	Cane Bayou Mitigation Bank (S1 ±707.9 ac, S2 ±457.6 ac)		Other Waters (S1 ±5.2 ac, S2 ±4.7 ac)		Existing Trails (improved)
	Wetlands (Pine Savanna) (S1 ±394.7 ac, S2 ±290.2 ac)		Other Waters/Bayhead Stringers		Powerline within Bank
	Cypress-Tupelo/Scrub-Shrub Swamp (S1 ±31.9 ac)		Other Waters/Ponds (S1 ±0.8 ac)		Proposed Low Water Crossings
	Pine Flatwood Upland (S1 ±21.3 ac)		Ditch		Proposed 3ft Earthen Plugs
	Loblolly Pine-Hardwood Forest (S1 ±133 ac, S2 ±16.7 ac)		Elevated Woods Road		
	Longleaf Pine Flatwood Upland Buffer (S1 ±97 ac, S2 ±143.7 ac)		Log Cabin Road		
	Cypress-Tupelo/Scrub-Shrub Swamp Buffer (S1 ±15 ac)		Blue Marlin Dr.		

Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Restoration Plan
Figure 14a

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: October 19, 2016





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

Legend		
Cane Bayou Mitigation Bank	Proposed 3ft Earthen Plugs	Cypress-Tupelo/Scrub-Shrub Swamp
Elevated Woods Road	Ditch	Pine Flatwood Upland
Log Cabin Road	Ponds	Loblolly Pine-Hardwood Forest
Blue Marlin Dr	Other Waters	Longleaf Pine Flatwood Upland Buffer
Powerline within Bank	Other Waters/Bayhead Stringers	Cypress-Tupelo/Scrub-Shrub Swamp Buffer
Proposed Low Water Crossings	Wetlands (Pine Savanna)	

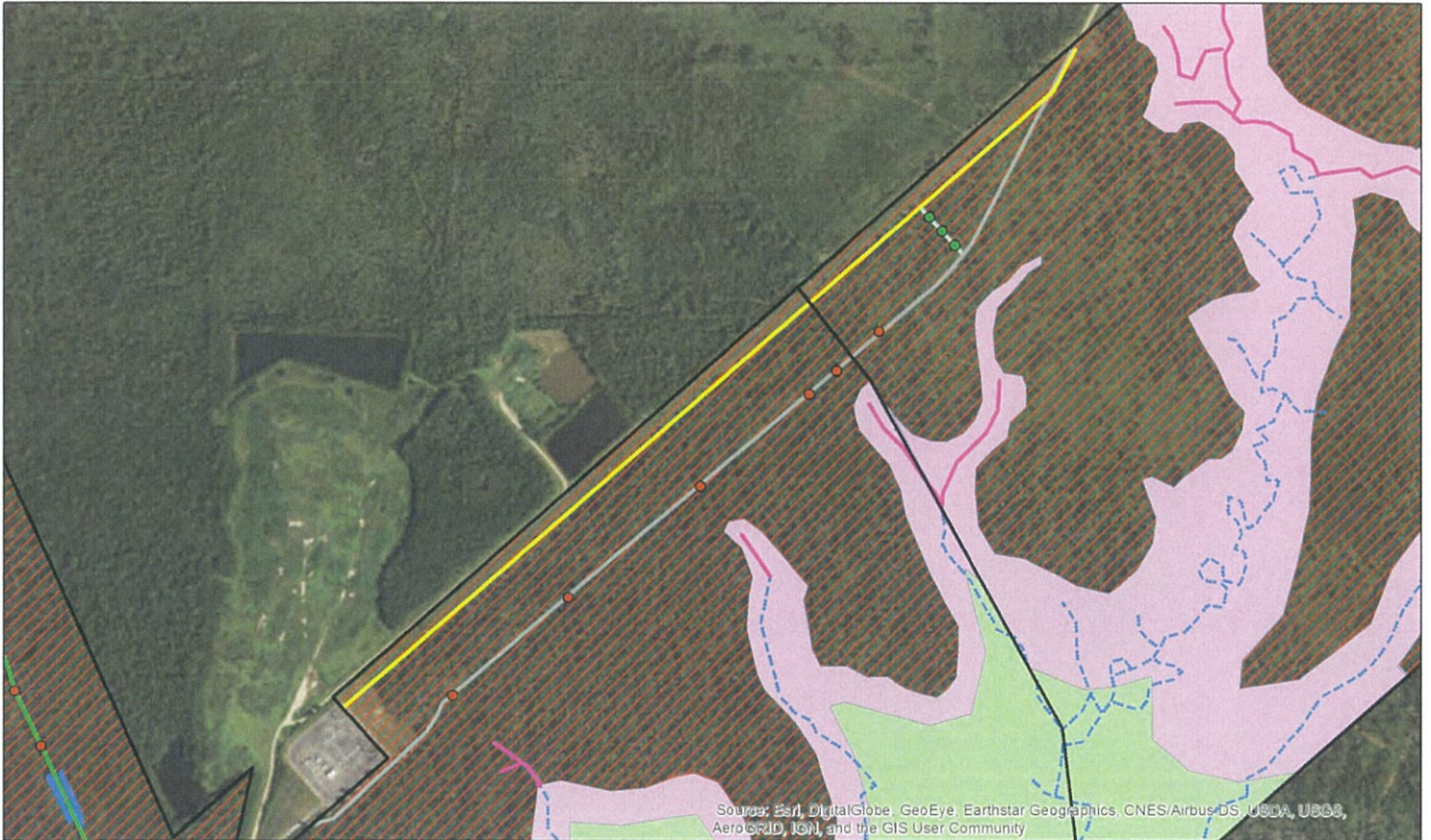
Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Restoration Plan
(Elevated Woods Road)
Figure 14b

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: October 19, 2016

N
▲

0 0.09 0.18 0.27
Miles



Legend

- | | | |
|--------------------------------------|--------------------------------|------------------------------|
| Cane Bayou Mitigation Bank | Other Waters/Bayhead Stringers | Powerline within Bank |
| Wetlands (Pine Savanna) | Ponds | Proposed Low Water Crossings |
| Loblolly Pine-Hardwood Forest | Ditch | Proposed 3ft Earthen Plugs |
| Longleaf Pine Flatwood Upland Buffer | Elevated Woods Road | |
| Other Waters | Log Cabin Road | |

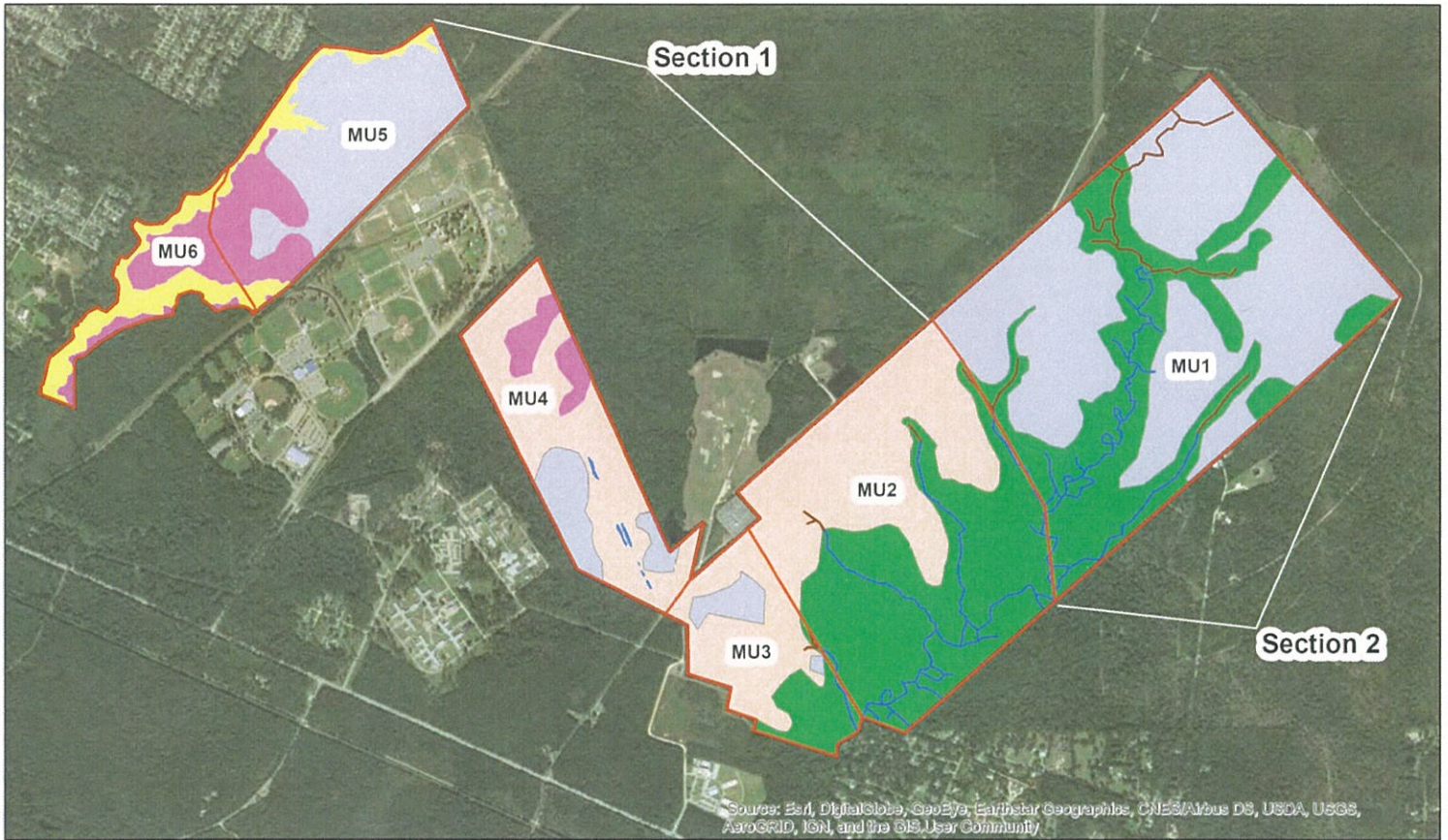
**Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana**

**Restoration Plan
(Log Cabin Road)
Figure 14c**

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: September 16, 2016

N

0 0.08 0.16 0.24
Miles



Legend

	Cane Bayou Mitigation Bank ±1165.5 ac		Mixed Hardwood-Loblolly Forest ±343.3 ac
	Management Units		Degraded Pine Flatwood Upland ±68.4 ac
	Heavily Encroached Pine Savanna ±266.3 ac		Other Waters ±9.1 ac
	Moderately Encroached Pine Savanna ±418.6 ac		Other Waters/Bayhead Stringers
	Cypress-Tupelo/Scrub-Shrub Swamp ±46.9 ac		Ponds ±0.8 ac

Cane Bayou Mitigation Bank
St. Tammany Parish
Louisiana

Management Units
Figure 15

Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70434
Date: October 19, 2016

N



0 0.15 0.3 0.45
Miles

Figure 15a

MU/phase 1: Beginning at the northern most point and travelling clockwise.

1	30.366819	N and	89.985552	W
2	30.358805	N and	89.977672	W
3	30.347996	N and	89.992201	W
4	30.351438	N and	89.992605	W
5	30.356727	N and	89.99595	W
6	30.358167	N and	89.997158	W

MU/phase 2: Beginning at the northern most point and travelling clockwise.

1	30.358167	N and	89.997158	W
2	30.356727	N and	89.99595	W
3	30.351438	N and	89.992605	W
4	30.347996	N and	89.992201	W
5	30.343323	N and	89.998478	W
6	30.343928	N and	90.000253	W
7	30.350733	N and	90.004889	W
8	30.3511	N and	90.004403	W
9	30.352034	N and	90.005334	W

MU/phase 3: Beginning at the northern most point and travelling clockwise.

1	30.350733	N and	90.004889	W
2	30.343928	N and	90.000253	W
3	30.34342	N and	90.000416	W
4	30.342932	N and	90.001265	W
5	30.342508	N and	90.001287	W
6	30.343467	N and	90.004752	W
7	30.343877	N and	90.004653	W
8	30.344257	N and	90.00588	W
9	30.345038	N and	90.005694	W
10	30.345519	N and	90.007443	W
11	30.347276	N and	90.007442	W
12	30.347697	N and	90.008357	W
13	30.348936	N and	90.007296	W

MU/phase 4: Beginning at the northern most point and travelling clockwise.

1	30.36053	N and	90.013446	W
2	30.349952	N and	90.008134	W
3	30.350976	N and	90.00675	W
4	30.348936	N and	90.007296	W
5	30.347697	N and	90.008357	W
6	30.34936	N and	90.011998	W
7	30.357786	N and	90.016699	W

MU/phase 5: Beginning at the northern most point and travelling clockwise.

1	30.368977	N and	90.017715	W
2	30.365992	N and	90.016214	W
3	30.359592	N and	90.023738	W
4	30.358615	N and	90.025225	W
5	30.358766	N and	90.02533	W
6	30.358761	N and	90.025174	W
7	30.358861	N and	90.025139	W
8	30.361428	N and	90.026909	W
9	30.36203	N and	90.026951	W
10	30.362981	N and	90.02673	W
11	30.363411	N and	90.026334	W
12	30.363935	N and	90.026129	W
13	30.364118	N and	90.025845	W
14	30.368212	N and	90.022243	W
15	30.367961	N and	90.020036	W

MU/phase 6: Beginning at the northern most point and travelling clockwise.

1	30.363935	N and	90.026129	W
2	30.363411	N and	90.026334	W
3	30.362981	N and	90.02673	W
4	30.36203	N and	90.026951	W
5	30.361428	N and	90.026909	W
6	30.358861	N and	90.025139	W
7	30.358761	N and	90.025174	W
8	30.358766	N and	90.02533	W
9	30.358904	N and	90.026011	W
10	30.358729	N and	90.026731	W
11	30.359132	N and	90.027292	W
12	30.359409	N and	90.027379	W
13	30.359477	N and	90.027803	W
14	30.359342	N and	90.028251	W
15	30.358996	N and	90.028338	W
16	30.358854	N and	90.028484	W
17	30.358628	N and	90.028492	W
18	30.358481	N and	90.029513	W
19	30.35818	N and	90.030566	W
20	30.357681	N and	90.031559	W
21	30.357201	N and	90.032218	W
22	30.357146	N and	90.032516	W
23	30.357019	N and	90.032633	W
24	30.355348	N and	90.032641	W
25	30.355857	N and	90.0341	W
26	30.357178	N and	90.033656	W
27	30.357932	N and	90.032669	W
28	30.35823	N and	90.032693	W
29	30.358449	N and	90.032449	W
30	30.35893	N and	90.031652	W
31	30.358772	N and	90.031296	W
32	30.359149	N and	90.030823	W
33	30.359889	N and	90.03082	W
34	30.360052	N and	90.031011	W
35	30.360439	N and	90.030916	W
36	30.360752	N and	90.030589	W
37	30.361282	N and	90.029866	W
38	30.361786	N and	90.03019	W
39	30.36207	N and	90.029938	W
40	30.361929	N and	90.028942	W
41	30.362229	N and	90.028505	W
42	30.362958	N and	90.027945	W
43	30.362969	N and	90.027311	W

Figure 15b

SECTION 1 MANAGEMENT SCHEDULE

The following information lists work to be conducted in each of the Management Units (MU)/Phases within Section 1 of the CBMB for Construction and Establishment during the first 10 years. The information includes restoration acreage, non-credit acreage, and work tasks by MU/Phase and year in which the work is to be conducted. Dividing the area into Management Units/Phases allows for coordinated sequencing of restoration and management activities in each MU/Phase, particularly in regard to the use of prescribed fire. Figure MWP – 15 shows the location of the MUs/Phases. Detailed descriptions of the restoration management activities can be found in the CBMB MWP Section VI. Description of Work.

Management Unit/Phase: MU/Phase2

Acreage of Unit: 297.5

Acreage of firelines etc.: Log Cabin Rd: 2.1, Improved Firelines: 0.1

Other non-credit acreage: Loblolly Pine Hardwood Forest: 121.7, Waters: 4

Management Unit/Phase: MU/Phase3

Acreage of Unit: 88.1

Acreage of firelines etc.: Log Cabin Rd: 1, Improved Firelines: 0.1, Ex. Trails: 0.6

Other non-credit acreage: Loblolly Pine Hardwood Forest: 11.3 ac, Waters 0.4

Management Unit/Phase: MU/Phase4

Acreage of Unit: 123.8

Acreage of firelines etc.: Elevated Woods Rd: 2.1, Improved Firelines: 0.8, Ponds: 0.8

Other non-credit acreage: 0

Management Unit/Phase: MU/Phase5

Acreage of Unit: 143.1

Acreage of firelines etc.: Improved Firelines 0.1, Ex. Trails: 2.9

Other non-credit acreage: Cypress-Tupelo/Scrub Shrub Swamp: 0.3, Pine Flatwood Uplands: 0.1

Management Unit/Phase: MU/Phase6

Acreage of Unit: 55.4

Acreage of firelines etc.: 0

Other non-credit acreage: Cypress-Tupelo/Scrub Shrub Swamp:31.6, Pine Flatwood Uplands: 21.2

MU/Phase 1 Is in Section II.

Acreage of Unit: 457.6

Acreage of Firelines etc.: Log Cabin Rd: 1.6, Improved Firelines: 0.7

Other non-credit acreage: Loblolly Pine Harwood Forest: 16.7, Waters: 4.7

Habitat Type	Restoration Type	Total Acres	MU/Phase 1	MU/Phase 2	MU/Phase 3	MU/Phase 4	MU/Phase 5	MU/Phase 6
Pine savanna	Enhancement	266.3	0	130	54.3	82	0	0
Pine savanna	Enhancement	418.6	290.2	0	10.1	23.8	94.5	0
Cypress-tupelo scrub-shrub swamp	Buffer	15	0	0	0	0	14.5	0.5
Longleaf pine flatwood uplands	Buffer	240.7	143.7	39.6	10.3	14.3	30.7	2.1
Cypress-tupelo scrub-shrub swamp	Non-mitigation	31.9	0	0	0	0	0.3	31.6
Loblolly pine-hardwood forest	Non-mitigation	149.7	16.7	121.7	11.3	0	0	0
Pine flatwood uplands	Non-mitigation	21.3	0	0	0	0	0.1	21.2
Waters of the U.S.	Non-mitigation	9.1	4.7	4	0.4	0	0	0
Non-mitigation Areas	Non-mitigation	12.9	2.3	2.2	1.7	3.7	3	0
Total Bank Acres		1165.5	457.6	297.5	88.1	123.8	143.1	55.4
Total Wet Mitigation Acres		684.9	290.2	130	64.4	105.8	94.5	0
Total Mitigation Acres (wet plus upland buffer)		940.6	433.9	169.6	74.7	120.1	139.7	2.6

CONSTRUCTION AND ESTABLISHMENT MANAGEMENT UNIT TASKS
Section 1 CBMB
PINE SAVANNA/BUFFER

YEAR	ACTIVITY	MANAGEMENT UNITS/PHASES	NO. TREATMENTS	COMMENTS
1	Boundary Marking (once/5 yrs)	1 - 5	1	
1	Hydro Restoration	1 - 4	1	Low water crossings (LWC); ditch plugging
1	Groundcover Establishment	2 - 6	1	In treated cogon patches
1	Herbicide - trees/brush	2 - 6	1	200 ft. buffer only in MU 6
1	Herbicide - cogon grass patches	2 - 6	1	As-needed where found
1	Mechanical - Roller Chopping	2 - 4	1	
1	Establish Fire Lines	2 - 5	1	
1	Prescribed Fire	2 - 5	1	All longleaf habitats
1	Tree Planting	2 - 5	1	
1	Vegetation Monitoring - General	2 - 5	1	
1	Road Repair-Maintenance	2 - 4	1	Maintenance following logging
2	Groundcover Establishment	2 - 6	1	As-needed in treated cogon patches
2	Herbicide - trees/brush	2 - 6	1	Repeat areas where needed
2	Herbicide - cogon grass patches	2 - 6	1	As-needed
2	Mechanical - Roller Chopping	2 - 4	1	Repeat areas where needed
2	Prescribed Fire	2 - 5	1	All longleaf habitats
2	Tree Planting	2 - 5	1	Poor survival areas only.
2	Vegetation Monitoring - Trees/Growth	2 - 5	1	
2	Vegetation Monitoring - General	2 - 5	1	
2	Road Maintenance		1	Maintenance following logging if applicable
3	Groundcover Establishment	2 - 6	1	As-needed In treated cogon patches
3	Herbicide - trees/brush	2 - 6	1	Repeat areas where needed
3	Herbicide - cogon grass patches	2 - 6	1	As-needed
3	Prescribed Fire	2 - 4	1	All longleaf habitats
3	Tree Planting	2 - 5	1	Poor survival areas only
3	Vegetation Monitoring - Trees/Growth	2 - 5	1	
3	Road Maintenance	2 - 5	1	Maintenance as needed
4	Groundcover Establishment	2 - 6	1	As-needed In treated cogon patches
4	Herbicide - trees/brush	2 - 6	1	Repeat areas where needed
4	Herbicide - cogon grass patches	2 - 6	1	As-needed
4	Prescribed Fire	4 - 5	1	50% longleaf habitats; begin burning every other year
4	Vegetation Monitoring - Trees/Growth	2 - 5	1	
4	Road Maintenance	2 - 5	1	Maintenance as needed
5	Herbicide - trees/brush/cogon	2 - 6	1	Spot treatment where needed
5	Prescribed Fire	2 - 3	1	50% longleaf habitats; burn MUs every other year
5	Road Maintenance	2 - 5	1	Maintenance as needed
5	Vegetation Monitoring - Trees/Growth		1	
5	Vegetation Monitoring - General	2 - 5	1	
6	Boundary Remarketing (once/5 yrs)	2 - 6	1	
6	Herbicide - trees/brush/cogon	2 - 6	1	Repeat areas where needed
6	Prescribed Fire	4 - 5	1	50% longleaf habitats; burn MUs every other year
6	Low water crossings maintenance	1 - 4	1	Maintenance as needed
6	Road Maintenance	2 - 5	1	Maintenance as needed

YEAR	ACTIVITY	MANAGEMENT UNITS/PHASES	NO. TREAT-MENTS	COMMENTS
7	Herbicide - trees/brush/cogon	2 - 6	1	Repeat areas where needed
7	Prescribed Fire	2 - 3	1	50% longleaf habitats; burn MUs every other year
7	Road Maintenance	2 - 5	1	Maintenance as needed
8	Herbicide - trees/brush/cogon	2 - 6	1	Repeat areas where needed
8	Prescribed Fire	4 - 5	1	50% longleaf habitats; burn MUs every other year
8	Road Maintenance	2 - 5	1	Maintenance as needed
9	Herbicide - trees/brush/cogon	2 - 6	1	Repeat areas where needed
9	Prescribed Fire	2 - 3	1	50% longleaf habitats; burn MUs every other year
9	Road Maintenance	2 - 5	1	Maintenance as needed
10	Herbicide - trees/brush/cogon	2 - 6	1	Repeat areas where needed
10	Prescribed Fire	4 - 5	1	50% longleaf habitats; burn MUs every other year
10	Vegetation Monitoring - General	2 - 5	1	
10	Road Maintenance	2 - 5	1	Maintenance as needed



DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUG 10 2012

Operations Division
Surveillance and Enforcement Section

Mr. Thomas K. Brown
Biological Surveys, Inc.
P. O. Box 94
Mandeville, Louisiana 70471

Dear Mr. Brown:

Reference is made to your request, on behalf of St. Tammany Parish Government, for a U.S. Army Corps of Engineers' (Corps) jurisdictional determination on property located in Sections 37, 42, 43, and 46, Township 8 South, Range 12 East, St. Tammany Parish, Louisiana (enclosed map). Specifically, this property is identified as two sites on and north of US 190 and west of Cane Bayou.

Field inspections of the property were conducted on multiple dates throughout 2012. Based on the results of these investigations, 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 other waters subject to Corps' jurisdiction. Other waters that may be subject to Corps' jurisdiction are indicated in blue on the map. Furthermore, Cane Bayou that may be subject to Corps' jurisdiction under Section 10 of the Rivers and Harbors Act (RHA). A DA permit will be required prior to any work in waters subject to Corps' jurisdiction under Section 10 of the RHA.

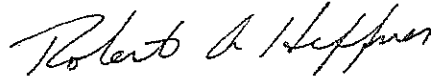
You and your client are advised that this preliminary jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision prior to the expiration date or the District Commander has identified, after public notice and comment, that specific 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. For additional information regarding coastal use permit requirements, contact Ms. Christine Charrier, Coastal Management Division, Louisiana Department of Natural Resources at (225) 342-7953.

Should there be any questions concerning these matters, please contact Mr. Brian Oberlies at (504) 862-2275 and reference our Account No. 2011-02895-SY. If you have specific questions regarding the permit process or permit applications, please contact our Eastern Evaluation Section at (504) 862-2766. The New Orleans District Regulatory Branch is

committed to providing quality and timely service to our customers. The New Orleans District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please complete the survey on our web site at <http://per2.nwp.usace.army.mil/survey.html>.





Sincerely,



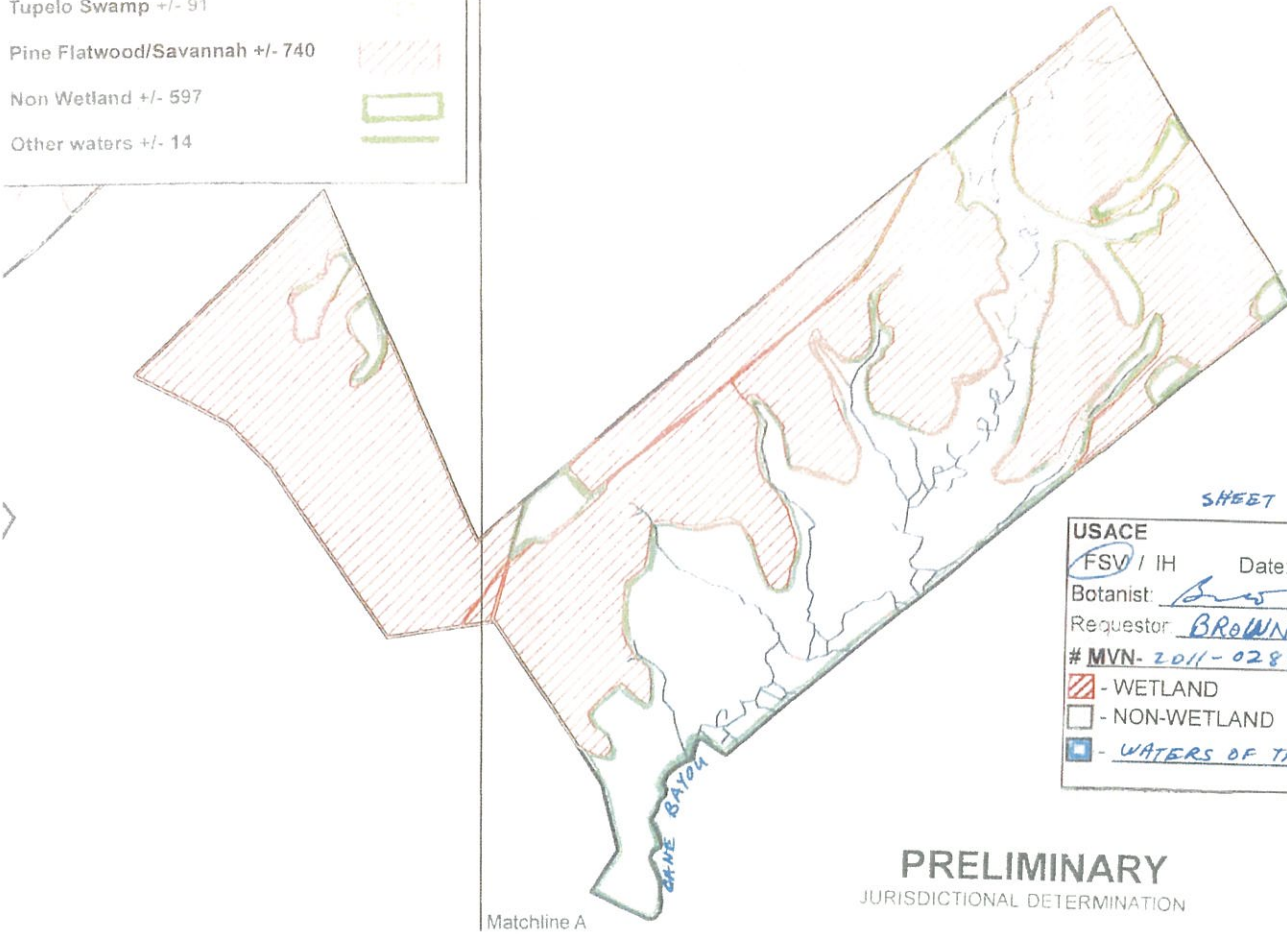
Pete J. Serio
Chief, Regulatory Branch

Enclosures




+/- 1442 Acres on Hwy 190, Mandeville, Louisiana - St. Tammany Parish Government

Total Acreage +/- 1442	
Tupelo Swamp +/- 91	
Pine Flatwood/Savannah +/- 740	
Non Wetland +/- 597	
Other waters +/- 14	

Matchline A








SHEET 1 OF 2

USACE
 FSV / IH Date: 7-26-2012
 Botanist: *BWS*
 Requestor: *BROWN*
 # MVN-2011-02895-SY
 - WETLAND
 - NON-WETLAND
 - WATERS OF THE US / 404910

PRELIMINARY
 JURISDICTIONAL DETERMINATION



+/- 1442 Acres on Hwy 190, Mandeville, Louisiana - St. Tammany Parish Government

Total Acreage +/- 1442	
Tupelo Swamp +/- 91	
Pine Flatwood/Savannah +/- 740	
Non Wetland +/- 597	
Other waters +/- 14	

SHEET 2 OF 2

USACE

FSV IH Date: 7-26-2012

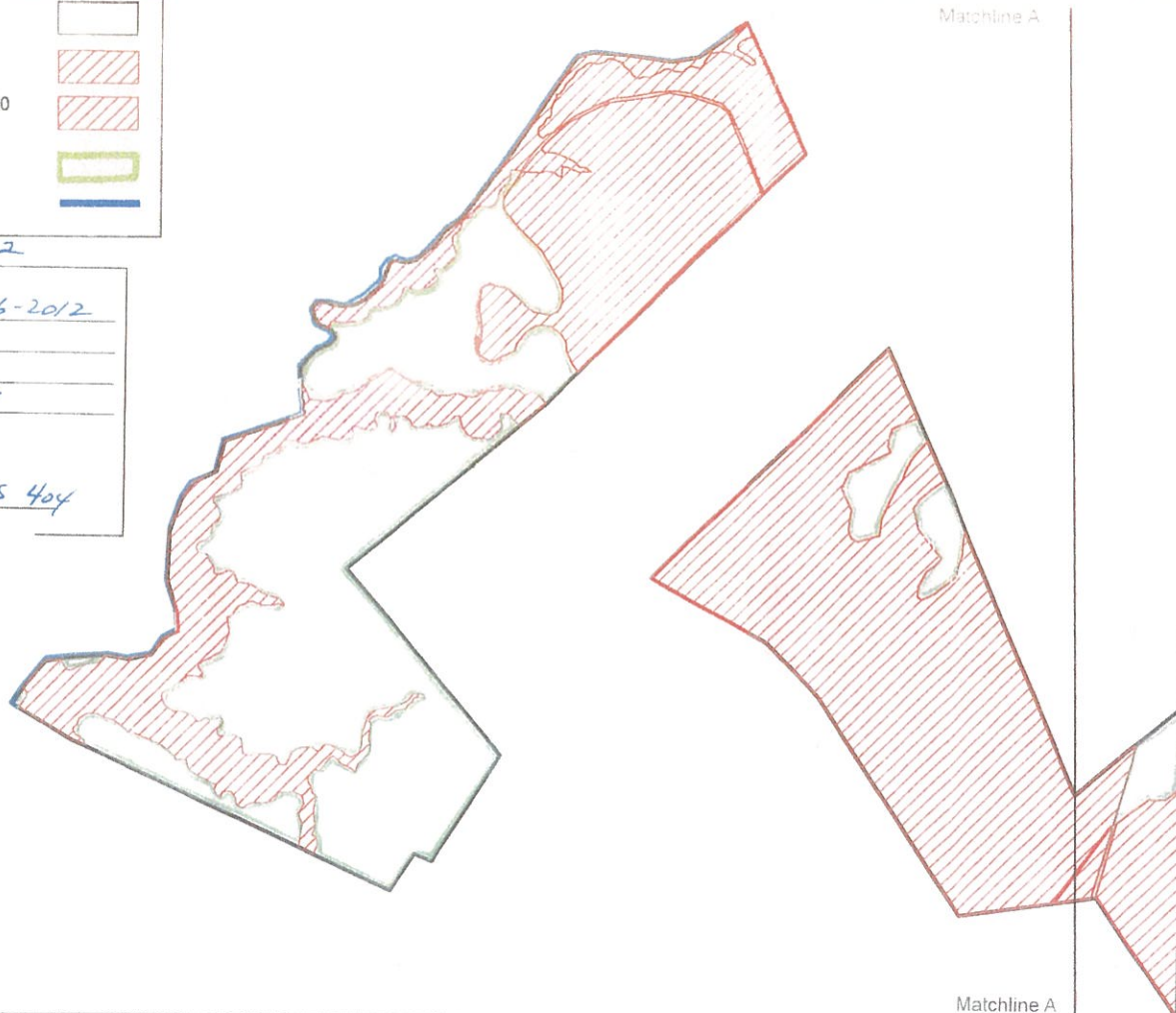
Botanist: *BWS*

Requestor: *BROWN*

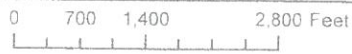
MVN-2011-02895-SY

-  - WETLAND
-  - NON-WETLAND
-  - *WATERS OF THE US 404*

PRELIMINARY
JURISDICTIONAL DETERMINATION

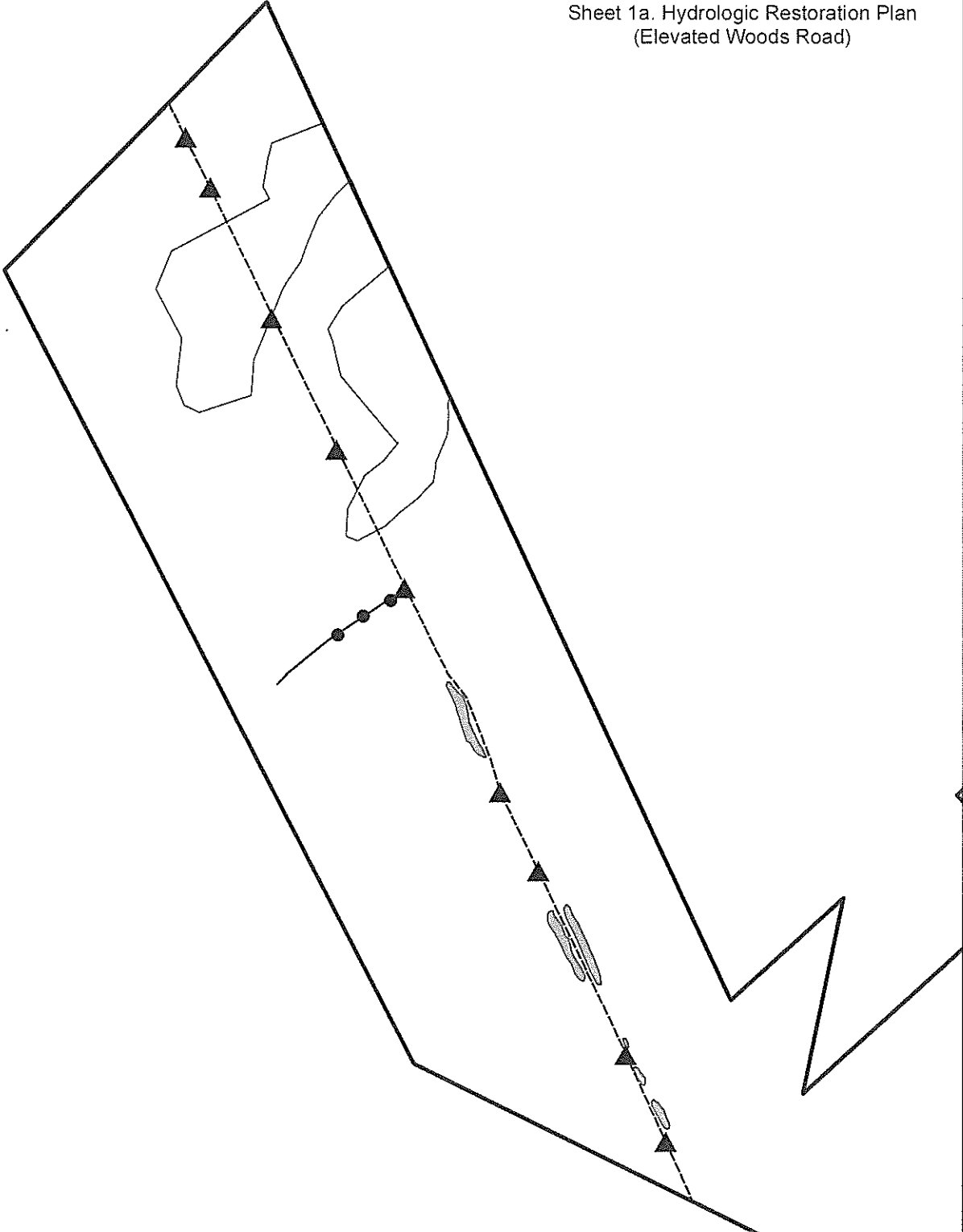


Biological Surveys Inc., P.O. Box 94, Covington, LA 70433
Date: 28th October 2011



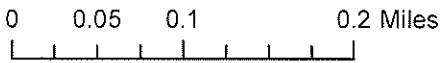
*This is not a boundary survey and should not be utilized as one

Sheet 1a. Hydrologic Restoration Plan
(Elevated Woods Road)

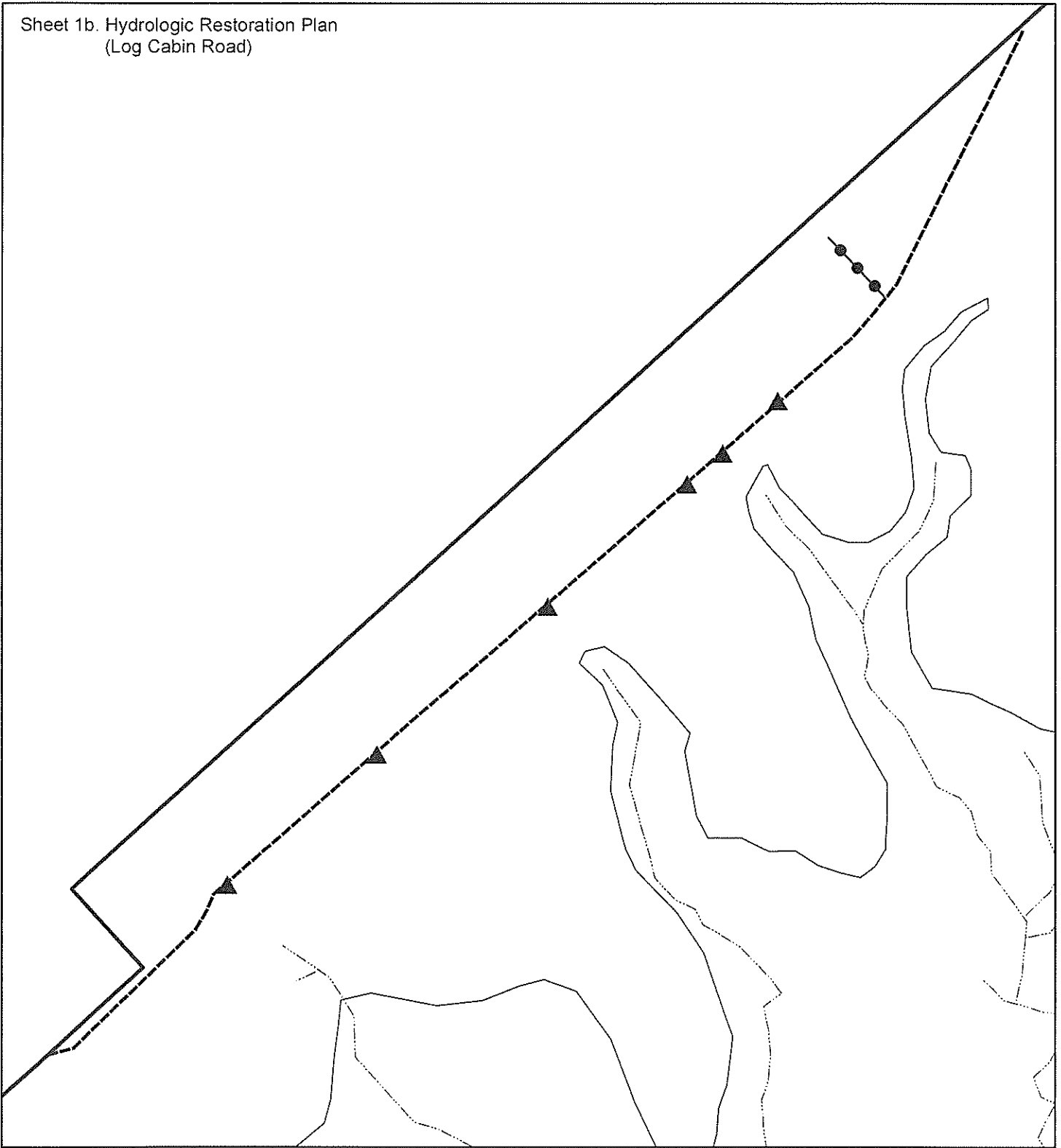


Legend








- | | |
|---------------------|--------------------|
| CBMB Boundary | Pond |
| Wetlands | 3 ft Earthen Plugs |
| Elevated Woods Road | Low Water Crossing |
| Ditch | |



Sheet 1b. Hydrologic Restoration Plan
(Log Cabin Road)

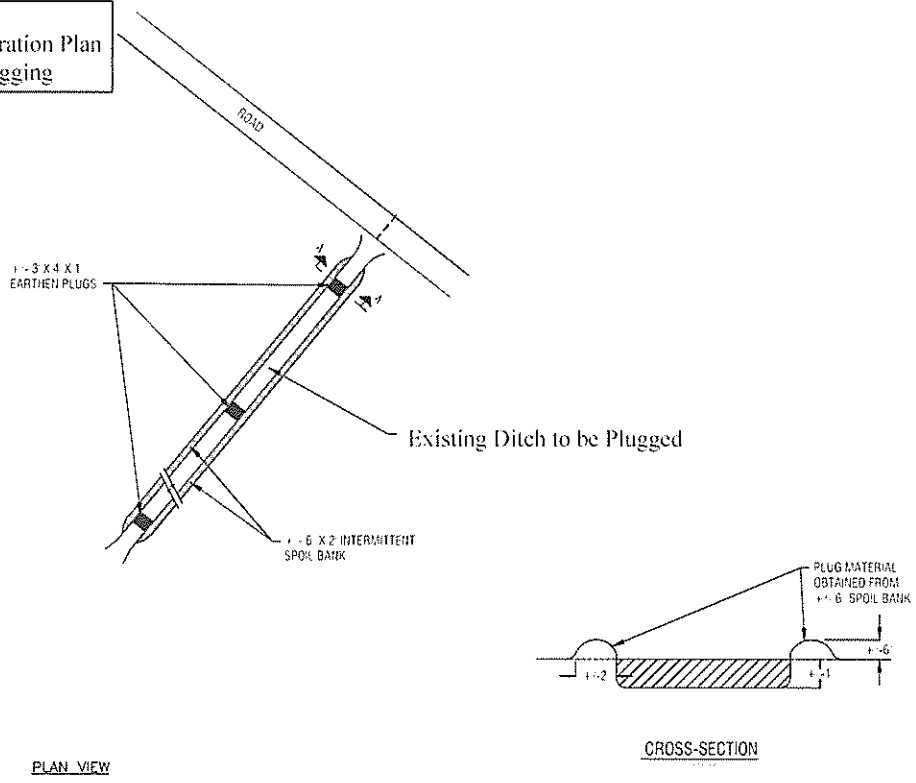


Legend

- | | |
|--|--|
|  CBMB Boundary |  Other Waters |
|  Wetlands |  3 ft Earthen Plugs |
|  Log Cabin Road |  Low Water Crossing |
|  Ditch | |

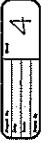


Sheet 2
Hydrologic Restoration Plan
Typical Ditch Plugging



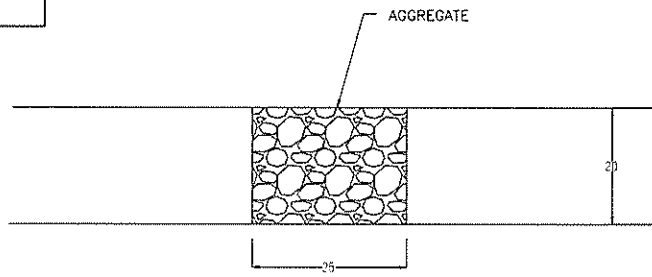
APPENDIX 2B
EARTHEN PLUGS

ASSEMBLY NO. 202578-00
REVISED 04/2010
BY: [signature]

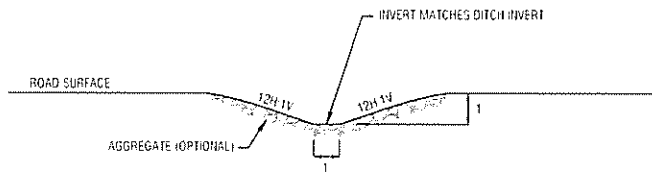


4

Sheet 3
Hydrologic Restoration Plan
Low Water Crossings



PLAN VIEW



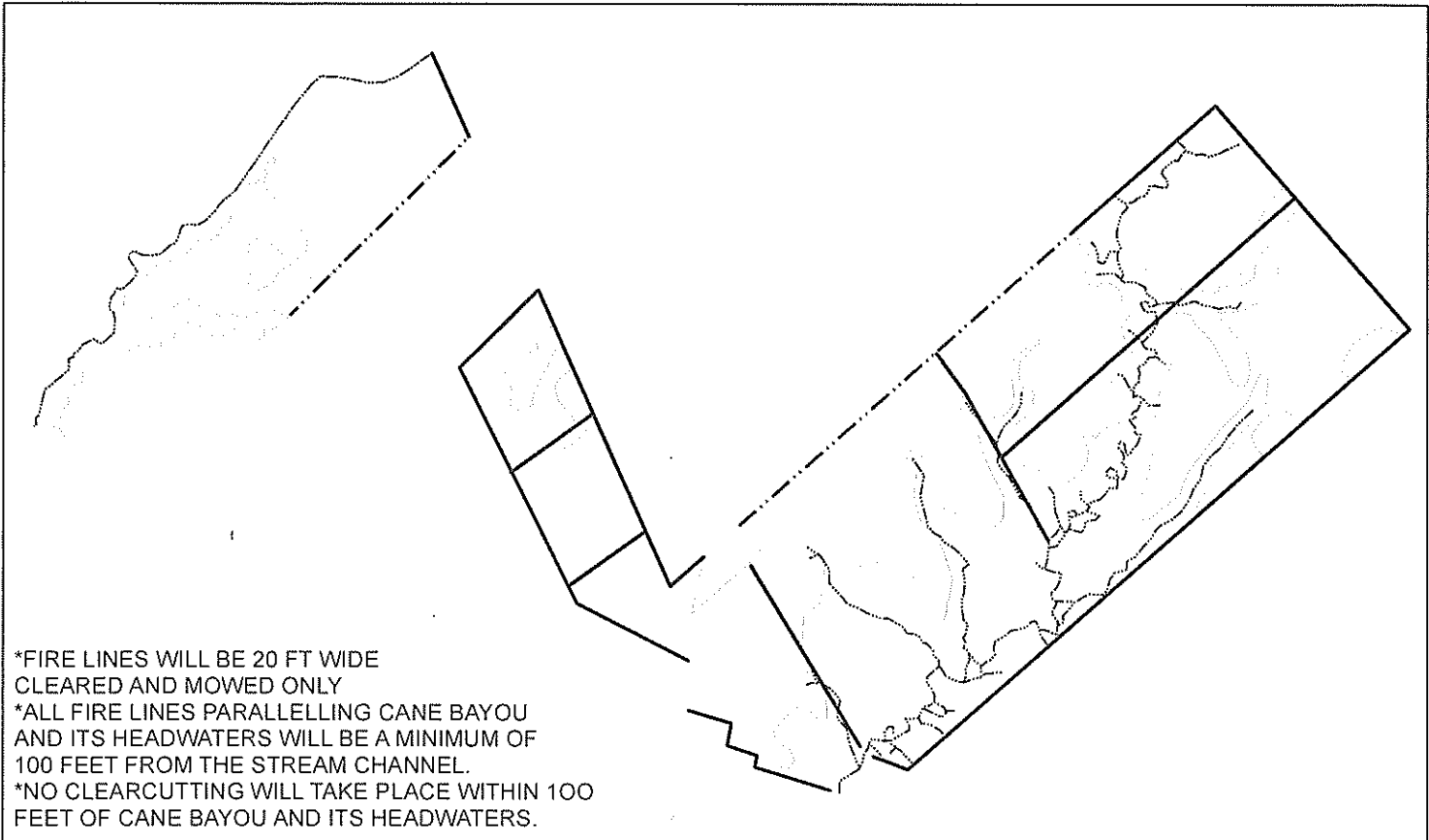
CROSS-SECTION

LOW WATER CROSSING

DATE: 12/15/2015
PROJECT: HYDROLOGIC RESTORATION
SHEET: 3 OF 5



5



Legend


- Fire Lines 43,500 ft
- · - · - ROW to be used as Fire Lines 9,191 ft
- ⋯ Wetlands
- Other Waters

Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

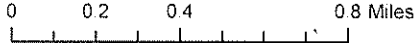
 Proposed Fire Lines
 Sheet 4

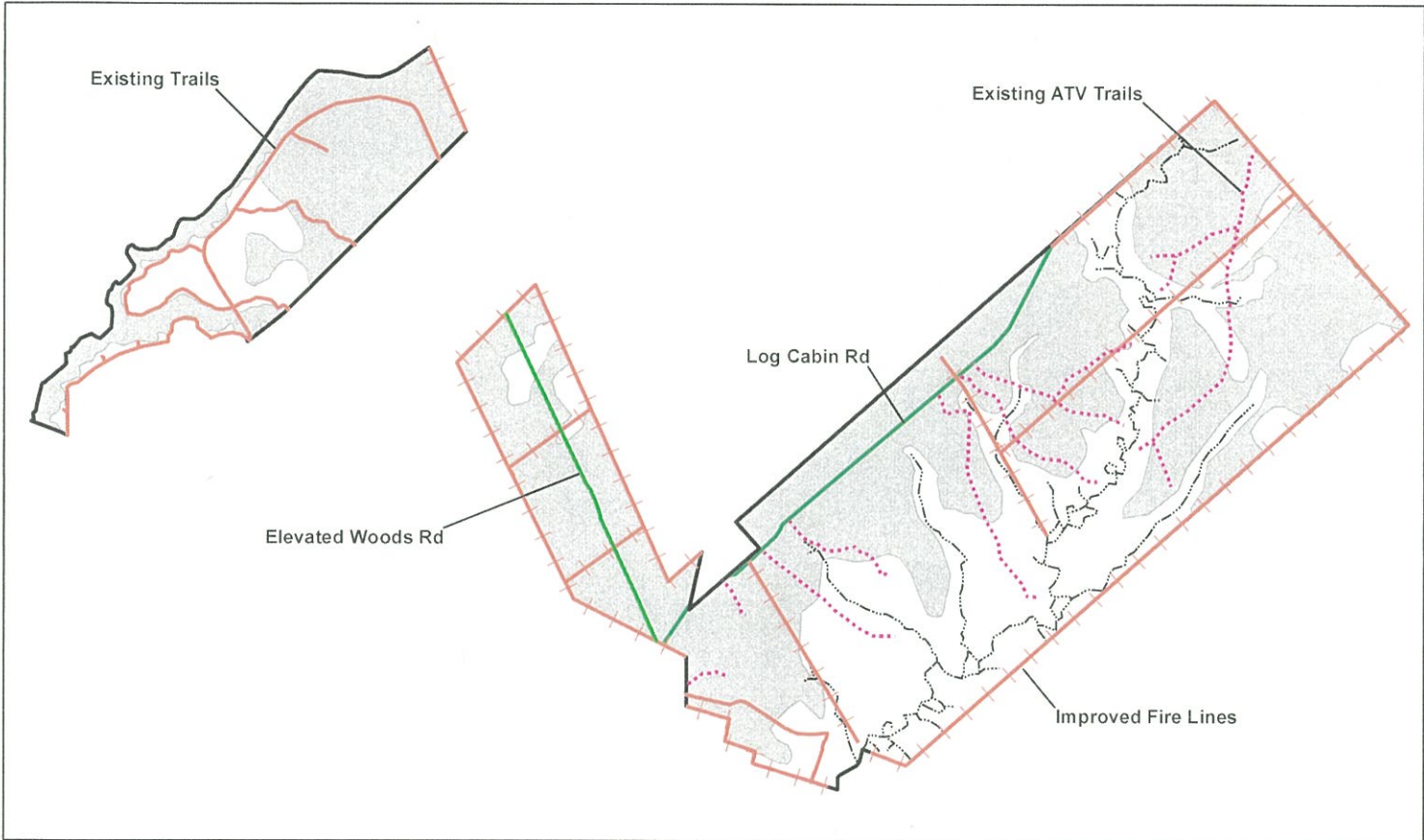
Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: September 19, 2016

N



0 0.2 0.4 0.8 Miles





Legend

- CBMB Boundary
- Wetlands
- Other Waters
- Log Cabin Road ± 8230'x25'
- Elevated Woods Road ± 4500'x20'
- Existing Trails (improved) ± 18,220'x20'
- Existing ATV Trails (for management use only) ± 20,990'x6'
- Improved Fire Lines (approximate locale) ± 43,500'x3'

Cane Bayou Mitigation Bank
 St. Tammany Parish
 Louisiana

**Existing/Proposed
 Roads and Trails
 Sheet 5**

Biological Surveys, Inc.
 P.O. Box 94
 Covington, LA 70434
 Date: September 15, 2016

N

0 0.125 0.25 0.5 Miles

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

ATTACHMENT MWP - B
FIRE MANAGEMENT PLAN

**Site Fire Management Plan for
Cane Bayou Mitigation Bank
April 2017**



Site name: Cane Bayou Mitigation Bank

Site Background Information

General description of site

Cane Bayou Mitigation Bank (CBMB) is a wetland mitigation bank owned by St. Tammany Parish. The site is comprised primarily of highly altered longleaf pine savannas. The site will be restored to the historic plant communities as part of the mitigation process. Generally speaking, restoration will be achieved using a combination of prescribed fire, ecological logging, mechanical tree and shrub removal, herbicide application, and tree planting. It is estimated that initial restoration will take 10-15 years to restore structure and composition to the point that intensive management other than prescribed fire (which will be needed in perpetuity) will not be needed. Long-term, the site will be managed as a natural area with a focus of conserving wet longleaf pine savannas while providing appropriate public access and use. CBMB will be managed by St. Tammany Parish.

The site is made up of two separated tracts, one to the west and one to the east. The western portion is 458 acres and the eastern section is 712 acres, totaling 1165.5 acres. Of the 1170 acres within the project site, a minimum of 944 will be restored as part of the mitigation bank.

CBMB is located between two busy highways in a largely urbanized environment with many landowners and land uses. Approximately 1.5 miles north of the site is US Interstate 12, and 0.3 miles to the south is US Hwy. 190. Immediately north and northeast of CBMB is private forestland, and to the west is a primarily a mix of public and private properties. To the south and southeast are Fontainebleau State Park, Northlake Nature Center, Pelican Park future expansion land, Northlake Behavioral Health System, and Monteleone Junior High School. Pelican Park, a public recreation facility, is located between the western and eastern parcels. The preferred route of a planned new roadway, the Mandeville By-pass is located on the eastern boundary of Pelican Park, also separating the western and eastern parcels just south of the eastern section. The west boundary is Bayou Castine, and housing developments are just to the west beyond the bayou. Numerous marinas and houses are located down drainage on Bayou Castine. Cane Bayou forms the eastern boundary with some residential development to the southeast and the state park down drainage. Lake Pontchartrain, a large estuary, is located approximately two miles downstream (south) of both bayous.

Description of natural and historic role of fire

CBMB is within the historic longleaf pine flatwoods region of the eastern Florida Parishes of southeast Louisiana. The longleaf portions of the site are estimated to have historically burned every 1-3 years. Topographically lower and wetter areas would have burned less frequently,

with the tupelo swamps burning the least (perhaps once every 50 or more years). The open characteristics of longleaf pine communities were maintained by frequent fires, caused by lightning strikes or anthropogenic sources. Most of the site has not burned in at least twenty years; however, a wildfire in the spring of 2006 burned approximately 100 acres of unit CBI. Another wildfire is known to have occurred in portions of all units at some point in the late 1990s, but no map is available. Much of the wildfire areas have little or no canopy due to mortality from the burn or subsequent logging of beetle-damaged trees. Most portions of CBMB that were historically open longleaf pine habitat, are now far removed from that original condition. would not currently burn without first undergoing logging or other mechanical treatments.

Description of fire environment (weather, fuels, wildfire history, managed fire history)

Prescribed fire will arguably be the most important management tool used on the tract. Fire will be applied in pine savanna wetlands and included uplands, and, during drier periods, allowed to burn into bayhead strands and along streams to return those habitats to their historical character and distribution. Burning is essential for longleaf pine regeneration, control of unwanted hardwoods and shrubs, and rehabilitation/perpetuation of rich herbaceous ground-cover communities. Properly timed fires stimulate native herbaceous plants to grow vigorously, flower and produce seeds, stimulate longleaf pine to grow out of the "grass-stage", and control brown spot needle-blight on young longleaf.

The prescribed fire program will be designed to restore the area to natural conditions and to support maintenance of those conditions in perpetuity. On-going observations of site conditions will permit modification of the prescribed fire schedule, if needed, to accomplish priority objectives. Existing fire breaks (natural or artificial), such as roads/trails and stream bottoms, will be used wherever possible to reduce unnatural disturbances to the site and allow burning in larger blocks to mimic natural fire behavior. However, where these features are not present, fire breaks will need to be installed by mechanical (mowing, mulching) and chemical treatment. No plowing or disking will occur, as these activities encourage erosion and may affect hydrology.

Because the site will be undergoing aggressive restoration in the early management years, fuel types and conditions will be changing as the restoration progresses. The majority of the site currently is overstocked with offsite pines and overgrown with hardwood trees and shrubs. The site will be logged and/or cleared with mechanical equipment and chemical treatments. The resulting fuel type in pine savannas will likely be light logging slash (fuel type 11). After the initial prescribed burns, the site will mostly be moving toward fuel type 3, dominated by native bunch grasses. Eventually, the logged zones will support a longleaf pine dominated overstory. Grasses will remain the primary carrier of fire, so it would remain fuel model 3, but pine straw will increasingly contribute to the fuel bed. Lower, wetter zones, such as cypress-tupelo, bayheads and scrub-shrub swamp, will either be not flammable (unburnable) or will be fuel model 8 that may support very infrequent low intensity fire. The southern portion of the east parcel consists of loblolly pine – hardwood forest that may not be restored to historic upland longleaf pine forest, but will receive low intensity fire.

Fire Management Justification

The primary target community type for restoration is wet longleaf pine savanna, which is critically dependent on frequent fire as a sustaining functional process. Bayheads are a secondary target that will experience occasional fire. The great majority of the area has not

experienced fire in many years (> 20 years). The fire regime condition class is moderately departed (Condition Class 2). The natural fire regime should be able to be restored with mechanical and chemical treatments.

Longleaf pine is the dominant overstory species of wet longleaf pine savannas, though it is typically scattered (canopy cover typically < 50%) due to the wet conditions of these habitats. It is a fire-adapted species that depends on fire to control competition and allow regeneration. Fire limits competition from brush and off-site pine (i.e. loblolly and slash pine) and creates open seed beds for longleaf pine seedlings to establish. Fire also stimulates longleaf seedling to grow taller faster, (i.e. leaving “grass stage” and entering “candle stage”). Target grasses benefit from frequent fire. Native warm season bunch grasses, such as *Andropogon spp.*, *Ctenium aromataicum*, *Schizachyrium spp.*, *Aristida spp.*, etc., all benefit from frequent fire.

There are numerous old-growth (> 100 years) longleaf pines on the site (primarily in unit CB3). The reintroduction of fire can kill longleaf pine trees in long-unburned stands. In the absence of fire, the accumulation of pine needle “duff” under and around trees creates conditions that encourage longleaf feeder roots to grow into the lower layers of the duff. Feeder roots can be killed as fire penetrates the duff layer causing tree mortality or damage. Burning around old-growth longleaf trees will have to be applied in a strategic manner, and may take several highly controlled burns to get the duff layer to a level that will allow for normal application of prescribed fire without risk of killing trees. Individual trees may need to be protected if burning is to be conducted during times when duff moisture is under 90%.

Fire Management Goals

1. Restore and sustain open longleaf pine savannas that support a broad diversity of native savanna plant and wildlife species.
2. Strategically apply fire to long unburned longleaf areas so as not to cause mortality of old-growth trees.
3. Allow fires to penetrate into bayheads and loblolly pine – hardwood forest on a regular basis.
4. Provide for firefighter and public safety during all burn operations.
5. Reduce the threat and risk of unplanned wildfire to the property and surrounding neighbors.
6. Ensure controlled fire does not escape property boundaries and move onto adjacent private property.
7. Ensure smoke production does not directly impact public safety.
8. Ensure all personnel understand the link between firing operations and ecological goals on the property.
9. Consume accumulated down woody debris to enhance conditions for native herbaceous plants to thrive, and create receptive seed bed for longleaf and other desirable plant species.
10. Kill or coppice unwanted trees and shrubs.
11. Enhance foraging habitat for endangered Red Cockaded Woodpeckers.
12. Where possible, allow fire to extinguish along wet areas to create natural “ecotones” between habitat types.

Fire Regime Proposal

All longleaf pine savanna restoration areas will be burned at least once by the end of year 1. Application of frequent prescribed fire will be an initial and long-term management practice in wet longleaf pine savannas and included uplands. Fire will occasionally burn through bayhead stringers and into the edges of stream bottoms. Initially, fires may be applied at a frequency greater than the estimated historical frequency of once every 1 – 3 years to help in the control of undesirable woody cover and restoration of the native ground cover. Where commercial removal of off-site timber is needed, timing of application of fire will be determined by a number of factors, including timber marketability (whether better burned or unburned) and estimated results of fires burning under different conditions (e.g., before cut or after).

The historical frequency and seasonality of fire will be reestablished through an aggressive, strictly regulated prescribed burning program. Historically, most fires occurred during the growing season, which in southeast Louisiana may be considered to be mid-March to late October, with the majority of fires concentrated between late March and mid-June (early thunderstorm season). Early to mid-growing season burns will be favored over late growing season or dormant season burns, though burns at other seasons will be applied to achieve particular objectives, such as reduction of the duff layer around relic pines or prevention of smoke impacts in developed areas. Burn frequency will eventually be implemented consistent with the estimated historical frequency of fires in this region, that is, every 1 – 3 years in longleaf pine upland and wet savanna restoration areas. However, in the initial restoration phase, burns will need to be applied more frequently (every 1 to 2 years) to reduce undesirable woody vegetation (in combination with mechanical and/or chemical treatments) and promote native herbaceous ground cover.

Key Constraints

CBMB is located within an urban area. The primary constraints on achieving objectives will be related to smoke management. The site has smoke sensitive targets in virtually all directions, most notably I-12 to the north and US-190 to the south. The proposed Mandeville By-pass will also be a key constraint, but the Parish has the authority to close the road if needed. Individual burn unit size may need to be limited to reduce smoke duration and output. Furthermore, burning during days prior to foggy evenings should be avoided. The area is also adjacent or near a public park, hospital, school and subdivisions. There is the possibility for public to be present within the burn units without the knowledge of the fire practitioners, so public notification may need to be more thorough than in other, less urban, burn sites. Units CB5 and CB6 are within 0.5 mi. of Mandeville city limits, and are thus considered “Urban” burns. Unit size may be limited to 100 acres or less in urban areas.

The small size of burns and potentially limited smoke windows could limit the number of burn days on the site. Following logging, the site will likely have an increased heavy fuel load that could cause smoke issues into the night following a burn. Down drainage, on Bayou Castine, there is a series of Marinas and housing developments. They could potentially experience smoke impacts as a result of the “lake effect,” in which a night-time inversion layer can produce fog and trap smoke near the surface. The effect is strongest near the water, with smoke most heavily concentrated near the water surface down-drainage of the burn.

Lake Pontchartrain can also cause a sea-breeze effect, in which the wind can come off the water (out of the south) during the afternoon. This most often occurs in the spring when the water is

colder than the air. Colder water produces lower temperatures and higher pressure. High temperatures onshore will cause flow in an inland direction. This effect could cause unexpected wind shifts, impacting smoke and/or fire management.

Smoke Management

As noted in the Key Constraints section above, smoke management is the primary limitation for implementing fire on CBMB. Fire will likely be restricted to days in which the atmosphere will allow rapid smoke lifting and clearing (i.e. high mixing heights and vent rates). Fire will likely not be applied when fog is predicted. Burn days will be restricted to days in which the forecast predicts condition that would prevent smoke from impacting smoke sensitive areas.

The burn units are within three miles of numerous busy roadways (I-12, US-190, LA-59, LA-1088), and the site is within five miles of the Lake Pontchartrain Causeway and LA-434. If smoke is expected to impact any road ways, St. Tammany Parish Police may be contacted for traffic control.

Neighbor and Community Factors

CBMB is in an urban/developed area. There are numerous neighbors and community factors that could pose potential restraints on achieving the fire objectives. It is located only about 1.5 miles east of downtown Mandeville. The roads near CBMB are heavily traveled, the parks bordering and near the site are frequently used by the public. Because of the close proximity to a health facility and a school, the public may have more interest in the fire management than would be typical of a more rural site.

The site is located approximately five miles west of the US Fish and Wildlife Service (USFWS) Bayou Lacombe Refuge. The USFWS has engaged in prescribed fire operations for many years, and has included public outreach and education as part of their mission. Their efforts have helped increase public awareness and knowledge of the use of prescribed fire. Additional outreach may be necessary. Outreach efforts could include working with the hospital, school, marinas, and neighboring subdivisions to communicate the reasons for burning, and give them a chance to express their concerns. Public outreach could also include letters, knocking on doors, leaving door hangers, or posting information on websites or in the newspaper.

Maps

- Burn Unit and Subunit Map
- Location of site within parish
- Contingency Map
- Management Types
- Smoke Management Map
- Aerial Imagery
- Topographic Map
- Surrounding Land Use
- Transportation Map

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

ATTACHMENT MWP - C
COST ANALYSIS REPORTS
ACREAGE TABLES

TABLE 1a - Site Variables CBMB-Section I

SITE VARIABLES	
Acreage – Pine Savanna + Buffer	394.7 + 112 = 506.7 (507) Total
Acres groundcover establishment	1
Number Signs Boundary Marking	50
Number Low Water Crossings	14
Acres chemical treatment	507
Acres mechanical treatment	220
Days mechanical treatment fire lines	5
Acres prescribed burning	507
Acres tree planting	507
Number general vegetation plots	26
Number tree monitoring plots	26
Miles road maintenance	2

TABLE 1b - Construction Fund CBMB-Section I

CONSTRUCTION FUND			
ACTIVITY (Year 1)	UNIT	UNIT COST	TOTAL COST
Boundary Remarkings (once/5 yrs)	Signs	\$10	\$500
Establish Fire Lines	Day	\$1,500	\$7,500
Groundcover Establishment	Acre	\$200	\$200
Herbicide - cogon grass patches	Acre	\$140	\$140
Herbicide - trees/brush	Acre	\$175	\$88,725
Hydro Restoration - low water crossings (LWC)	LWC	\$1,000	\$14,000
Mechanical - Roller Chopping	Acre	\$130	\$28,600
Prescribed Fire	Acre	\$35	\$17,745
Road Repair Maintenance	Mile	\$3,500	\$7,000
Tree Planting	Acre	\$150	\$76,050
Vegetation Monitoring - General	Plot	\$189	\$4,914
		Subtotal	\$245,374
Miscellaneous/Contingency (10%)			\$24,537
		TOTAL Construction	\$269,911

TABLE 1c - Establishment Fund CBMB-Section I

ESTABLISHMENT FUND			
ACTIVITY (Years 2-15)	UNIT	UNIT COST	TOTAL COST
Boundary Remarking (once/5 yrs)	Signs	\$10	\$1,000
Groundcover Establishment	Acres	\$200	\$900
Herbicide - cogon grass patches	Acres	\$140	\$420
Herbicide - trees/brush	Acres	\$175	\$155,050
Herbicide - trees/brush/cogon	Acres	\$175	\$111,300
Low water crossings maintenance	Each LWC	\$500	\$7,000
Mechanical - Roller Chopping	Acres	\$130	\$16,250
Prescribed Fire	Acres	\$35	\$136,500
Road Maintenance	Miles	\$500	\$11,500
Tree Planting	Acres	\$150	\$22,800
Vegetation Monitoring - Trees/Growth	Plot	\$130	\$13,520
Vegetation Monitoring - General	Plot	\$189	\$14,742
		Subtotal	\$490,982
Miscellaneous/Contingency (10%)			\$49,098
5 Year Inflationary Adjustment			\$50,125
		TOTAL Establishment (Yrs 2-15)	\$590,205

CONSTRUCTION AND ESTABLISHMENT COSTS WORKSHEET CBMB

Section 1

PINE SAVANNA/BUFFER (506.7A)

YEAR	ACTIVITY	UNIT	# of UNITS	UNIT COST	NO. TREAT-MENTS	TOTAL COST	5 Year Inflationary Adjustment
1	Boundary Remarkings (once/5 yrs)	Signs	50	\$10	1	\$500	\$ 500
1	Hydro Restoration - low water crossings (LWC)	LWC	14	\$1,000	1	\$14,000	\$ 14,000
1	Groundcover Establishment	Acre	1	\$200	1	\$200	\$ 200
1	Herbicide - trees/brush	Acre	507	\$175	1	\$88,725	\$ 88,725
1	Herbicide - cogon grass patches	Acre	1	\$140	1	\$140	\$ 140
1	Mechanical - Roller Chopping	Acre	220	\$130	1	\$28,600	\$ 28,600
1	Establish Fire Lines	Day	5	\$1,500	1	\$7,500	\$ 7,500
1	Prescribed Fire	Acre	507	\$35	1	\$17,745	\$ 17,745
1	Tree Planting	Acre	507	\$150	1	\$76,050	\$ 76,050
1	Vegetation Monitoring - General	Plot	26	\$189	1	\$4,914	\$ 4,914
1	Road Repair-Maintenance	Mile	2	\$3,500	1	\$7,000	\$ 7,000
Miscellaneous/Contingency (10%)						\$24,537	\$24,537
Year 1 SUBTOTAL						\$269,911	\$269,911
2	Groundcover Establishment	Acre	1	\$200	1	\$200	\$ 200
2	Herbicide - trees/brush	Acre	507	\$175	1	\$88,725	\$ 88,725
2	Herbicide - cogon grass patches	Acre	1	\$140	1	\$140	\$ 140
2	Mechanical - Roller Chopping	Acre	125	\$130	1	\$16,250	\$ 16,250
2	Prescribed Fire	Acre	507	\$35	1	\$17,745	\$ 17,745
2	Tree Planting	Acre	127	\$150	1	\$19,050	\$ 19,050
2	Vegetation Monitoring - Trees/Growth	Plot	26	\$130	1	\$3,380	\$ 3,380
2	Vegetation monitoring - General	Plot	26	\$189	1	\$4,914	\$ 4,914
2	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,000
Miscellaneous/Contingency (10%)						\$15,140	\$15,140
Year 2 SUBTOTAL						\$166,544	\$166,544
3	Groundcover Establishment	Acre	1	\$200	1	\$200	\$ 200
3	Herbicide - trees/brush	Acre	253	\$175	1	\$44,275	\$ 44,275
3	Herbicide - cogon grass patches	Acre	1	\$140	1	\$140	\$ 140
3	Prescribed Fire	Acre	507	\$35	1	\$17,745	\$ 17,745
3	Tree Planting	Acre	25	\$150	1	\$3,750	\$ 3,750
3	Vegetation Monitoring - Trees/Growth	Plot	26	\$130	1	\$3,380	\$ 3,380
3	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,000
Miscellaneous/Contingency (10%)						\$7,049	\$7,049
SUBTOTAL						\$77,539	\$77,539
4	Groundcover Establishment	Acre	1	\$500	1	\$500	\$ 500
4	Herbicide - trees/brush	Acre	126	\$175	1	\$22,050	\$ 22,050
4	Herbicide - cogon grass patches	Acre	1	\$140	1	\$140	\$ 140
4	Prescribed Fire	Acre	253	\$35	1	\$8,855	\$ 8,855
4	Vegetation Monitoring - Trees/Growth	Plot	26	\$130	1	\$3,380	\$ 3,380
4	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,000
Miscellaneous/Contingency (10%)						\$3,593	\$3,593
SUBTOTAL						\$39,518	\$39,518
5	Herbicide - trees/brush/cogon	Acre	126	\$175	1	\$22,050	\$ 24,705
5	Prescribed Fire	Acre	253	\$35	1	\$8,855	\$ 9,921
5	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,120
5	Vegetation Monitoring - Trees/Growth	Plot	26	\$130	1	\$3,380	\$ 3,787
5	Vegetation monitoring - General	Plot	26	\$189	1	\$4,914	\$ 5,506
Miscellaneous/Contingency (10%)						\$4,020	\$4,504
SUBTOTAL						\$44,219	\$49,543
6	Boundary Remarkings (once/5 yrs)	Signs	50	\$10	1	\$500	\$ 560
6	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$ 10,000
6	Prescribed Fire	Acre	253	\$35	1	\$8,855	\$ 9,921
6	Low water crossings maintenance	Task	14	\$500	1	\$7,000	\$ 7,843
6	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,120
Miscellaneous/Contingency (10%)						\$2,628	\$2,944
SUBTOTAL						\$28,908	\$32,388

YEAR	ACTIVITY	UNIT	# of UNITS	UNIT COST	NO. TREAT-MENTS	TOTAL COST	5 Year Inflationary Adjustment
7	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$ 10,000
7	Prescribed Fire	Acre	253	\$35	1	\$8,855	\$ 9,921
7	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,120
Miscellaneous/Contingency (10%)						\$1,878	\$2,104
SUBTOTAL						\$20,658	\$23,145
8	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$ 10,000
8	Prescribed Fire	Acre	253	\$35	1	\$8,855	\$ 9,921
8	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,120
Miscellaneous/Contingency (10%)						\$1,878	\$2,104
SUBTOTAL						\$20,658	\$23,145
9	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$ 10,000
9	Prescribed Fire	Acre	253	\$35	1	\$8,855	\$ 9,921
9	Road Maintenance	Mile	2	\$500	1	\$1,000	\$ 1,120
Miscellaneous/Contingency (10%)						\$1,878	\$2,104
SUBTOTAL						\$20,658	\$23,145
10	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$11,204
10	Prescribed Fire	Acre	253	\$35	1	\$8,855	\$11,116
10	Vegetation monitoring - General	Plot	26	\$189	1	\$4,914	\$6,169
10	Road Maintenance	Mile	2	\$500	1	\$1,000	\$1,255
Miscellaneous/Contingency (10%)						\$2,369	\$2,974
SUBTOTAL						\$26,063	\$32,718
11	Boundary Remarketing (once/5 yrs)	Signs	50	\$10	1	\$500	\$628
11	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$11,204
11	Prescribed Fire	Acre	223	\$35	1	\$7,805	\$9,798
11	Road Maintenance	Mile	2	\$250	1	\$500	\$628
Miscellaneous/Contingency (10%)						\$1,773	\$2,226
SUBTOTAL						\$19,503	\$24,484
12	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$11,204
12	Prescribed Fire	Acre	223	\$35	1	\$7,805	\$9,798
12	Road Maintenance	Mile	2	\$250	1	\$500	\$628
Miscellaneous/Contingency (10%)						\$1,723	\$2,163
SUBTOTAL						\$18,953	\$23,793
13	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$11,204
13	Prescribed Fire	Acre	223	\$35	1	\$7,805	\$9,798
13	Road Maintenance	Mile	2	\$250	1	\$500	\$628
Miscellaneous/Contingency (10%)						\$1,723	\$2,163
SUBTOTAL						\$18,953	\$23,793
14	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$11,204
14	Prescribed Fire	Acre	223	\$35	1	\$7,805	\$9,798
14	Road Maintenance	Mile	2	\$250	1	\$500	\$628
Miscellaneous/Contingency (10%)						\$1,723	\$2,163
SUBTOTAL						\$18,953	\$23,793
15	Herbicide - trees/brush/cogon	Acre	51	\$175	1	\$8,925	\$12,553
15	Prescribed Fire	Acre	223	\$35	1	\$7,805	\$10,978
15	Road Maintenance	Mile	2	\$250	1	\$500	\$703
Miscellaneous/Contingency (10%)						\$1,723	\$2,423
SUBTOTAL						\$18,953	\$26,657
Section 1 GRAND TOTAL						\$809,991	\$860,116

LONG-TERM MAINTENANCE & PROTECTION ANNUAL COSTS WORKSHEET CBMB

SECTION 1

PINE SAVANNA/BUFFER (507 A)

ACTIVITY	UNIT	# of UNITS	UNIT COST*	NO. TREAT-MENTS	TOTAL ANNUAL COST*
<i>* In whole dollars</i>					
Herbicide - brush/invasive species- 10% annually	Acre	50.7	\$175	1	\$8,873
Prescribed Fire (44%/year)	Acre	223	\$35	1	\$7,805
Vegetation Monitoring & Reporting - (once/5 yrs)	Plot	2.6	\$225	1	\$585
General Land Management	Acre	507	\$8	1	\$4,056
Boundary Remarkings Signs	Signs	10	\$10	1	\$100
Road Maintenance	Mile	2	\$500	1	\$1,000
Hydro-maintenance (Low water crossing)	Each	14	\$50	1	\$700
SUBTOTAL					\$23,119
Miscellaneous/Contingencies					\$2,312
CBMB LONG-TERM ANNUAL MAINTENANCE TOTAL					\$25,431

LONG-TERM MAINTENANCE AND PROTECTION INFLATIONARY CALCULATIONS CBMB

Section I

Long-Term Maintenance and Protection Escrow Account

Inflation Rate % Total Per Acre Return %
 2.29% \$1,650,000 \$3,254.44 3.0%
 5 Yr Average, 2010-2014

Year	Item	Total Cost @ Yr 0	Annual Maint Pmt (5-year Inflationary Rate)	Escrow Account Activity	Escrow Investment Account Balance	Investment Earnings
						\$ 1,650,000.00
16	Annual Cost Yr 16 - 50	\$25,431	\$ 36,533.75	\$ (36,533.75)	\$ 1,662,966.25	\$ 49,500.00
17	Annual Cost Yr 16 - 50	\$25,431	\$ 36,533.75	\$ (36,533.75)	\$ 1,676,321.48	\$ 49,888.99
18	Annual Cost Yr 16 - 50	\$25,431	\$ 36,533.75	\$ (36,533.75)	\$ 1,690,077.37	\$ 50,289.64
19	Annual Cost Yr 16 - 50	\$25,431	\$ 36,533.75	\$ (36,533.75)	\$ 1,704,245.94	\$ 50,702.32
20	Annual Cost Yr 16 - 50	\$25,431	\$ 39,996.96	\$ (39,996.96)	\$ 1,715,376.35	\$ 51,127.38
21	Annual Cost Yr 16 - 50	\$25,431	\$ 39,996.96	\$ (39,996.96)	\$ 1,726,840.68	\$ 51,461.29
22	Annual Cost Yr 16 - 50	\$25,431	\$ 39,996.96	\$ (39,996.96)	\$ 1,738,648.94	\$ 51,805.22
23	Annual Cost Yr 16 - 50	\$25,431	\$ 39,996.96	\$ (39,996.96)	\$ 1,750,811.45	\$ 52,159.47
24	Annual Cost Yr 16 - 50	\$25,431	\$ 39,996.96	\$ (39,996.96)	\$ 1,763,338.82	\$ 52,524.34
25	Annual Cost Yr 16 - 50	\$25,431	\$ 44,791.22	\$ (44,791.22)	\$ 1,771,447.76	\$ 52,900.16
26	Annual Cost Yr 16 - 50	\$25,431	\$ 44,791.22	\$ (44,791.22)	\$ 1,779,799.97	\$ 53,143.43
27	Annual Cost Yr 16 - 50	\$25,431	\$ 44,791.22	\$ (44,791.22)	\$ 1,788,402.75	\$ 53,394.00
28	Annual Cost Yr 16 - 50	\$25,431	\$ 44,791.22	\$ (44,791.22)	\$ 1,797,263.61	\$ 53,652.08
29	Annual Cost Yr 16 - 50	\$25,431	\$ 44,791.22	\$ (44,791.22)	\$ 1,806,390.30	\$ 53,917.91
30	Annual Cost Yr 16 - 50	\$25,431	\$ 50,160.15	\$ (50,160.15)	\$ 1,810,421.86	\$ 54,191.71
31	Annual Cost Yr 16 - 50	\$25,431	\$ 50,160.15	\$ (50,160.15)	\$ 1,814,574.37	\$ 54,312.66
32	Annual Cost Yr 16 - 50	\$25,431	\$ 50,160.15	\$ (50,160.15)	\$ 1,818,851.46	\$ 54,437.23
33	Annual Cost Yr 16 - 50	\$25,431	\$ 50,160.15	\$ (50,160.15)	\$ 1,823,256.85	\$ 54,565.54
34	Annual Cost Yr 16 - 50	\$25,431	\$ 50,160.15	\$ (50,160.15)	\$ 1,827,794.42	\$ 54,697.71
35	Annual Cost Yr 16 - 50	\$25,431	\$ 56,172.62	\$ (56,172.62)	\$ 1,826,455.62	\$ 54,833.83
36	Annual Cost Yr 16 - 50	\$25,431	\$ 56,172.62	\$ (56,172.62)	\$ 1,825,076.67	\$ 54,793.67
37	Annual Cost Yr 16 - 50	\$25,431	\$ 56,172.62	\$ (56,172.62)	\$ 1,823,656.35	\$ 54,752.30
38	Annual Cost Yr 16 - 50	\$25,431	\$ 56,172.62	\$ (56,172.62)	\$ 1,822,193.42	\$ 54,709.69
39	Annual Cost Yr 16 - 50	\$25,431	\$ 56,172.62	\$ (56,172.62)	\$ 1,820,686.60	\$ 54,665.80
40	Annual Cost Yr 16 - 50	\$25,431	\$ 62,905.78	\$ (62,905.78)	\$ 1,812,401.42	\$ 54,620.60
41	Annual Cost Yr 16 - 50	\$25,431	\$ 62,905.78	\$ (62,905.78)	\$ 1,803,867.67	\$ 54,372.04
42	Annual Cost Yr 16 - 50	\$25,431	\$ 62,905.78	\$ (62,905.78)	\$ 1,795,077.92	\$ 54,116.03
43	Annual Cost Yr 16 - 50	\$25,431	\$ 62,905.78	\$ (62,905.78)	\$ 1,786,024.47	\$ 53,852.34
44	Annual Cost Yr 16 - 50	\$25,431	\$ 62,905.78	\$ (62,905.78)	\$ 1,776,699.42	\$ 53,580.73
45	Annual Cost Yr 16 - 50	\$25,431	\$ 70,446.02	\$ (70,446.02)	\$ 1,759,554.38	\$ 53,300.98
46	Annual Cost Yr 16 - 50	\$25,431	\$ 70,446.02	\$ (70,446.02)	\$ 1,741,894.98	\$ 52,786.63
47	Annual Cost Yr 16 - 50	\$25,431	\$ 70,446.02	\$ (70,446.02)	\$ 1,723,705.81	\$ 52,256.85
48	Annual Cost Yr 16 - 50	\$25,431	\$ 70,446.02	\$ (70,446.02)	\$ 1,704,970.96	\$ 51,711.17
49	Annual Cost Yr 16 - 50	\$25,431	\$ 70,446.02	\$ (70,446.02)	\$ 1,685,674.07	\$ 51,149.13
50	Annual Cost Yr 16 - 50	\$25,431	\$ 78,890.07	\$ (78,890.07)	\$ 1,657,354.21	\$ 50,570.22
		<u>\$890,085</u>	<u>\$1,847,389</u>			

LT Maintenance Incremental Funding per Acre Sold Yrs 1-15

Total Bank Acres - 507; Total Wet Acres - 394.7 (395)

Required LT Escrow at Year 16		\$1,650,000
90% of 395 Acres	356	
70% of 395 Acres	277	

Minimum Required Escrow Contribution per Acre Sold

	\$1,650,000	LT Escrow Funding Required at Year 16
	356	90% of 395 acres
\$	4,634.83	Required contrib for each sale

St. Tammany Parish's Contribution per Acre Sold

\$ 6,000.00

Escrow Balance After 70% of Acres Are Sold

	277.0	70% of 395 wet acres
\$	6,000.00	
\$	1,662,000.00	

LT Escrow must be fully funded by the time 70% of the total wet acres are sold

LT Escrow is fully funded with: \$1,650,000

St. Tammany Estimated Needs

	<u># Acres Needed for STP projects</u>	<u>Cumulative Percent of Bank Acres Used (Phase I)</u>	<u>Acres Sales @ \$ 6,000.00</u>	<u>LT Escrow Incremental Funding</u>
Year 0				
Year 1*	92	23%	\$ 552,000.00	\$ 552,000.00
Year 2	91	46%	\$ 546,000.00	\$ 1,098,000.00
Year 3	94	70%	\$ 564,000.00	\$ 1,662,000.00

CBMB Attachment MWP-C, Table 6. Non-Mitigation Area Calculations

Non-wetland Features	Area (sq ft)	Distance (ft)	Avg. Width (ft)
Future Improved Fire Breaks	78,843	26,281	3
Gravel Road - East Parcel	205,750	8230	25
Improved Nature Center Trail - West Parcel	153,000	7650	20
Elevated Woods Road - East Parcel	90,000	4500	20
Total Sq. Ft.	527,593		
Total Acres	12.11186869		

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

ATTACHMENT MWP - D
ASSESSMENT METHOD

Louisiana Wetland Rapid Assessment Method (LRAM)

CEMVN Acct # **MVN 2009-02402** Bank Name
 Acres Mitigation **394.7** **Cane Bayou MB-Section I**
 Watershed Basin **LakePont**

		Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Mitigation Factors	Mitigation Type	Enhanc	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Management	None	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
	Negative Influences	Medium	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Size	>500	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Buffer / Upland	Restored	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here	Pick Here
		0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sum:	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Area:	394.7							
	Sum x Area Affected:	1381.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Σ Mitigation: 1381.5
 Mitigation Potential: 3.5

COMMENTS

Mitigation Type	
Management	
Negative Influences	Mandeville ByPass
Size	Sectin I and II are under servitude so > than 500 acres
Buffer/Upland	112 acres of buffer

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

ATTACHMENT MWP - E

Herbaceous Indicators of High Quality Pine Savannas in Louisiana

Herbaceous Indicators of High Quality Pine Savannas in Louisiana

**Checklist of Indigenous Non-weedy Herbaceous Plants
Of Louisiana's Wet Longleaf Pine Savannas**

Latimore Smith and Chris Reid
September 2015

Note: Species nomenclature follows that accepted by the Integrated Taxonomic Information System (web link: <http://www.itis.gov/>). For some species, formerly accepted scientific names have been retained in synonymy due to their greater familiarity to most field botanists, and these are indicated in italics in parentheses.

* = known only in savannas east of the Mississippi # = known only in savannas west of the Mississippi

- Agalinis aphylla *
- A. filicaulis
- A. linifolia *
- A. obtusifolia
- Agrostis perennans
- Aletris aurea
- A. farinosa
- A. lutea *
- Andropogon gerardii
- A. glomeratus glaucopsis
- A. glomeratus hirsutior
- A. (*elliottii*) gyrans gyrans
- A. (*perangustatus*) gyrans stenophyllus
- A. (*mohrii*) liebmanni pungensis
- A. ternarius
- A. virginicus glaucous
- A. virginicus virginicus
- Anthaenantia rufa
- A. texana
- A. villosa
- Aristida purpurascens purpurascens
- A. purpurascens virgata
- Arundinaria tecta *
- Asclepias lanceolata
- A. longifolia
- A. michauxii *
- (*Aster*) Symphyotrichum adnatum
- (*Aster*) Symphyotrichum dumosum
- Bacopa caroliniana
- Balduina uniflora *
- Bartonian paniculata
- B. verna
- B. virginica
- Bidens mitis
- Bigelowia nudata
- Boltonia diffusa
- Buchnera floridana
- Burmannia capitata
- (*Cacalia*) Arnoglossum ovatum
- Calopogon multiflorus *
- C. oklahomensis #
- C. pallidus *
- C. tuberosus
- Carex glaucescens
- C. turgescens *
- Carphophorus pseudoliatris*
- Centella (*erecta*) asiatica
- Chaetopappa asteroides #
- Chaptalia tomentosa
- Cirsium lecontei *
- (*Cleistes*) Cleistesopsis bifaria *
- (*Coelorachis*) Mnesithea rugosa
- (*Coelorachis*) Mnesithea tessellata *
- Coreopsis (*linifolia*) gladiata
- C. nudata *
- Ctenium aromaticum
- Desmodium lineatum
- D. tenuifolium
- Dichanthelium (*angustifolium*) aciculare ramosum
- D. (*consanguineum*) ovale
- D. ensifolium
- D. dichotomum (*tenuis*) unciphyllum
- D. (*leucothrix*, *longiligulatum*) acuminatum longiligulatum
- D. scabriusculum
- (*Dichromena*) Rynchospora latifolia
- Drosera brevifolia
- D. capillaris
- D. intermedia *
- Eleocharis microcarpa
- E. tortilis
- E. tuberculosa
- Eragrostis elliottii
- E. refracta
- Erigeron vernus
- Eriocaulon compressum
- E. decangulare
- E. texense #
- Eryngium integrifolium
- E. yuccifolium
- Eupatorium leucolepis
- E. rotundifolium
- E. semiserratum
- Euphorbia corollata
- Euthamia gymnospermoides
- E. leptocephephala

__E. (*tenuifolia*) graminifolia *
 __Evolvulus sericeus #
 __Fimbristylis puberula
 __Fuirena breviseta
 __F. squarrosa
 __(*Gaura*) Oenothera lindheimeri
 __Gratiola brevifolia
 __G. pilosa
 __G. ramosa
 __Gymnopogon brevifolius
 __(*Hedyotis*) Stenaria nigricans
 __Helenium drummondii
 __Helenium vernale
 __Helianthus angustifolius
 __H. heterophyllus *
 __H. radula *
 __Hibiscus aculeatus
 __Hypericum brachyphyllum
 __H. cistifolium
 __H. crux-andreae
 __H. galioides
 __H. hypericoides
 __H. setosum
 __H. suffruticosum
 __Hypoxis hirsuta
 __H. rigida
 __H. sessilis
 __H. wrightii
 __Hyptis alata
 __Juncus elliottii
 __J. brachycarpus
 __J. repens
 __J. scirpoides
 __Lachnanthes caroliniana *
 __Lachnocaulon anceps
 __Lechea minor
 __L. pulchella
 __Liatris acidota #
 __L. punctata #
 __L. pycnostachya
 __L. spicata
 __Leersia hexandra
 __Lilium catesbaei*
 __Linum floridanum
 __L. macrocarpum *
 __L. medium
 __Lobelia brevifolia *
 __L. flaccidifolia #
 __L. floridana *
 __L. puberula
 __L. reverchonii #
 __Lophiola aurea *
 __Ludwigia hirtella
 __L. linearis
 __L. microcarpa #
 __L. pilosa
 __(*Lycopodium*) Lycopodiella alopecuroides
 __(*Lycopodium*) Lycopodiella appressa
 __(*Lycopodium*) Lycopodiella caroliniana
 __Lycopus virginicus
 __Macranthera flammea*
 __Manfreda virginica
 __Marshallia caespitosa
 __Marshallia (*tenuifolia*) graminifolia
 __Mecardonia acuminata
 __Mitreola petiolata
 __Mitreola sessilifolia
 __Muhlenbergia expansa
 __M. capillaris #
 __(*Osmunda*) Osmundastrum cinnamomea
 __O. regalis
 __Oxypolis filiformis
 __(*Panicum*) Coleataenia anceps
 __Panicum hemitomom
 __(*P. rigidulum pubescens*) Coleataenia
 longifolia longifolia
 __(*P. tenerum*) Coleataenia tenera
 __P. verrucosum
 __P. virgatum
 __Paspalum floridanum
 __P. praecox
 __P. setaceum
 __Phlox pilosa
 __Physostegia angustifolia
 __P. digitalis
 __P. longisepala
 __P. virginiana
 __Pinguicula lutea *

__Pinguicula pumila	__R. glomerata
__Pityopsis graminifolia	__R. gracilentia
__P. oligantha	__R. inexpansa
__Platanthera blephariglottis*	__R. microcarpa #
__P. ciliaris	__R. oligantha
__P. flava	__R. perplexa
__(<i>Platanthera</i>) <i>Gymnadeniopsis integra</i> *	__R. plumosa
__(<i>Platanthera</i>) <i>Gymnadeniopsis nivea</i>	__R. pusilla
__Pluchea (<i>rosea</i>) baccharis	__R. rariflora
__Pogonia ophioglossoides *	__R. tracyi #
__Polygala brevifolia *	__Rudbeckia grandiflora
__P. crenata	__R. texana
__P. cruciata	__Ruellia humilis
__P. cymosa	__R. noctiflora *
__P. hookeri *	__Sabatia campanulata
__P. incarnata	__S. dodecandra var. foliosa #
__P. leptocaulis	__S. gentianoides
__P. lutea	__S. macrophylla *
__P. mariana	__Saccharum (<i>Erianthus</i>) brevibarbis
__P. ramosa	__S. (<i>Erianthus</i>) giganteus
__Proserpinaca pectinata	__Sagittaria graminea
__(<i>Psilocarya</i>) <i>Rhynchospora nitens</i> #	__S. papillosa
__Pteridium aquilinum	__Sarracenia alata *
__Ptilimnium (<i>texense</i>) costatum #	__S. psitticina *
__Pycnanthemum albesens	__Schizachyrium scoparium
__P. tenifolium	__S. tenerum
__Rhexia alifanus	__Schoenolirion croceum #
__R. lutea	__Schwalbea americana #
__R. mariana	__Scleria baldwinii
__R. nashii *	__S. ciliata
__R. petiolata	__S. georgiana #
__R. virginica	__S. hirtella
__Rhynchospora caduca	__S. muehlenbergii
__R. careyana	__S. pauciflora
__R. cephalantha	__S. verticillata
__R. chapmanii *	__Scutellaria integrifolia
__R. ciliaris *	__Silphium radula gracile #
__R. compressa	__Sisyrinchium atlanticum
__R. debilis	__Solidago fistulosa *
__R. divirgens #	__S. nitida #
__R. elliottii	__S. odora
__R. fascicularis	__S. rugosa
__R. filifolia	__S. stricta
__R. globularis	__Sorghastrum nutans

Spartina spartinae #
 Sphagnum sp. (moss)
 Spiranthes longilabris
 Spiranthes spp.
 Sporobolus junceus
 S. pyramidatus #
 S. silveanus #
 Stokesia laevis *
 Stylisma aquatica #
 Tephrosia florida *
 T. hispidula *
 T. onybrychoides
 T. spicata
 (*Tofieldia*) *Triantha racemosa* *
 Tridens ambiguus
 T. strictus
 (*Trilisa*) *Carphephorus odoratissimus* *
 Utricularia cornuta
 U. juncea
 U. purpurea
 U. subulata
 Vernonia gigantea
 Viola lanceolata
 V. primulifolia
 Woodwardia virginica
 Xyris ambigua

CANE BAYOU MITIGATION BANK
MITIGATION BANKING INSTRUMENT

MBI ATTACHMENT D
ACKNOWLEDGEMENT LETTER

S Army Corps of Engineers
Regulatory Branch
PO Box 60267
New Orleans, LA 70160
ATTN: *{CORPS PROJECT MANAGER}*

Gentlemen:

{MITIGATION BANK NAME} has made arrangements with *{PERMITTEE'S NAME}* to purchase *{NUMBER OF ACRES OR CREDITS}* *{ACRES OR CREDITS}* of *{HABITAT TYPE}* for unavoidable impacts associated with work authorized by the Department of the Army permit number *{MVN-XXXX-XXXX-XX}*. The *{MITIGATION BANK NAME}* assumes the responsibility for the permittee's compensatory mitigation requirements (i.e., to implement, assure performance, and provide long-term management of the compensatory mitigation project) in accordance with provisions of the Mitigation Banking Instrument governing this bank.

{CLOSING}

{NAME}
{TITLE}