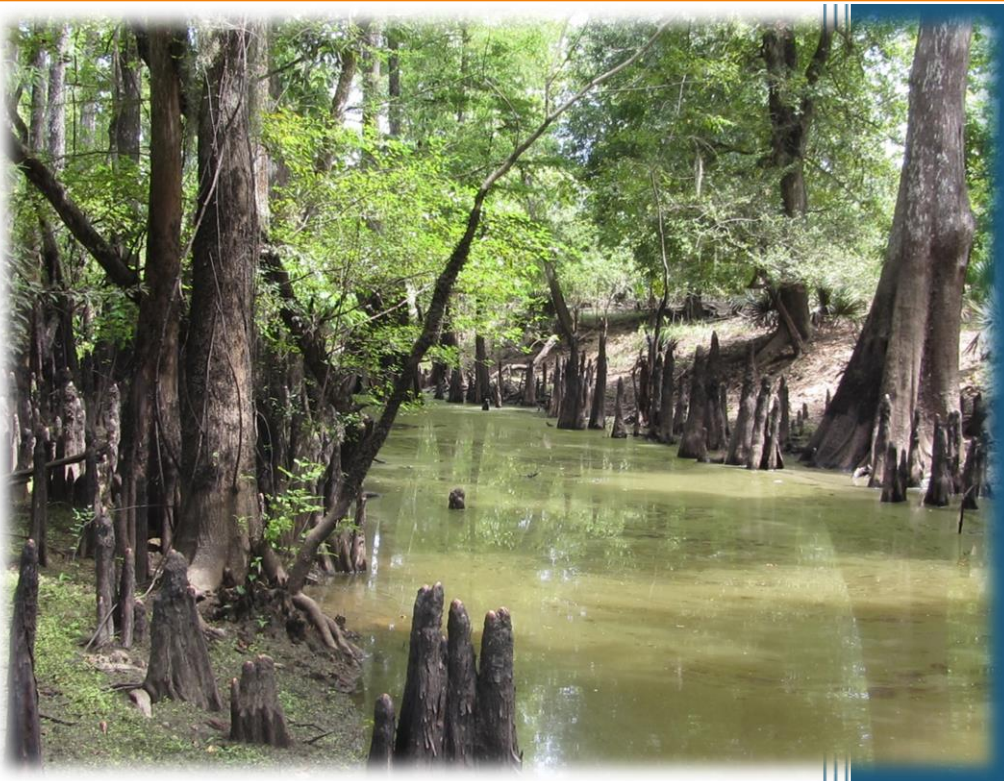
# Batiste Creek Mitigation Bank



Liberty County, Texas.

Batiste Woods Mitigation
Answers, LLC
P.O. Box 217
McHenry, Mississippi 39561
601-528-0546

# BATISTE CREEK WETLAND AND STREAM MITIGATION BANK PROSPECTUS

**Batiste Woods Mitigation Answers, LLC**

**P.O. Box 217**

**McHenry, Mississippi 39561**

**601-528-0546**

**H & T Environmental Inc.**

**P.O. Box 239**

**Elysian Fields, Texas 75639**

**ATTN: Michael Harris**

**Phone: 903-633-8224**

**Email: htenvironmental@eastex.net**

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# 1.0 INTRODUCTION

H & T Environmental Inc. has prepared this Prospectus in accordance with 33 CFR S 332.8(d)(2) to establish and operate the proposed 1,218-acre Batiste Creek Mitigation Bank (Bank). Batiste Woods Mitigation Answers (BWMA) will serve as the Bank Sponsor and will be referred to as the Sponsor throughout this Prospectus. The Bank is estimated to currently provide approximately 252.05 acres of waters of the United States, approximately 40,605 linear feet of intermittent stream. After construction a total of approximately 1,165 acres of forested wetland and forested riparian buffer for compensatory mitigation of unavoidable, permitted impacts to "Waters of the United States" if determined appropriate per 33 CFR S 332.3 (a)(1) and 33 CFR S 332.3 (b)(1).

## 2.0 REGIONAL DESCRIPTION AND SITE LOCATION

The Bank is approximately 4.75 miles northwest of Devers, in Liberty County, Texas (Attachment A, Figure 1), which is depicted on the United States Geological Survey (USGS) "Devers, Texas" map (Attachment A, Figure 2). The approximate center point of the Bank is Latitude 30.05681 North and Longitude 94.50923 West. The Bank is within the South Central Plains Major Land Resource Area (MLRA 150A) of the Atlantic and Gulf Coast Lowland Forest and Cropland Resource Region (Natural Resources Conservation Service [NRCS] 2006). MLRA 150A is characterized by nearly level plans and is dissected by rivers and streams flowing toward the Gulf of Mexico. The Bank lies within the Pine Island Bayou Cataloguing Unit (Pine Island Bayou; USGS Hydrological Unit Code [HUC] 12020007, which is adjacent to the Village Cataloguing Unit (Village; HUC 12020006) and the Lower Neches Cataloguing Unit (Lower Neches; HUC 102020003). The Pine Island Bayou Cataloguing Unit is located in the South Central Plains Level III Ecoregion, and the Village Cataloguing and the Lower Neches Cataloguing Units are located primarily in the Western Gulf Coastal Plain Level III Ecoregion.

Near the Gulf of Mexico coastline, the distinguishing characteristics are relatively flat topography and a prevalence of grassland vegetation. Inland, the plains become more irregular and forests become the predominant vegetative community. Recent urbanization and industrialization concerns in the region and most of the coastal prairies and associated forested areas have been converted to cropland, rangeland, pasture, or urban use. Additionally, cropland and pasture land is abandoned, tree encroachment generally occurs with Chinese tallow tree (*Triadica sebifera*) being the dominant invader. As a result, many of these areas transition to a Chinese tallow-dominated scrub-shrub forest.

In Liberty County, the summers are long, hot, and humid and are frequently cooled by sea breezes, while the winters are warm and occasionally interrupted by cold frontal passages (NRCS 1981). The average summer temperature is 81 degrees F with an average daily maximum temperature of 91 degrees F with the highest recorded temperature of 103 degrees F occurring on June 27, 1967.

The average winter temperature is 55 degrees F with an average daily minimum temperature of 44 degrees F with the lowest recorded temperature of 14 degrees F occurring on January 12, 1962. Rainfall occurs throughout the year with an annual average precipitation of 52 inches of which approximately 29 inches falls from April through September. The elevation of Liberty County ranges from 0 to 146 feet. Typical Bank surface elevations range from approximately 40 to 50 feet (Attachment A, Figure 2). The northern portions of the Bank gently slope south to southeast toward Pine Island Bayou.

## 2.1 Ownership and Sponsorship

BWMA (Batiste Woods Mitigation Answers, LLC.) will serve as the Property Owner and Sponsor. The Sponsor will oversee construction and establishment of the Bank and will serve as the long-term manager and steward but may appoint a long-term steward pursuant to 33 CFR S 332.7 (u)(2) which is subject to approval by the U.S. Army Corps of Engineers (USACE) Galveston District (CESWG). The anticipated long-term management will consist of activities such as monitoring, invasive species control, controlled burning, and boundary maintenance and protection. As a conservation area, the Bank will be protected by a perpetual conservation easement described in Section 7.4.

## 2.2 Driving Directions to the Site

From the State Highway (SH) 90 / Farm-to-Market (FM) 61 interchange in Devers, Texas, proceed east on SH 90 for approximately 4.75 miles then turn left, across the railroad tracks, onto an unimproved county road. Travel north/northwest on the unimproved CR for approximately 1.5 miles and stop at the entrance gate to the Batiste Creek Mitigation Bank property, Latitude 30.06892 North, Longitude 94.53884 West.

## 3.0 PROJECT GOALS AND OBJECTIVES

The goal is to restore, enhance, and preserve the Palustrine Forested Wetland (PFW), natural stream channel, within the Pine Island Bayou Cataloguing Unit (Attachment A, Figure 3 & 4). The restoration, enhancement, and preservation of the PFW, stream, and upland buffer will provide additional wetland functions and values not currently realized under the existing conditions and land use (e.g., flood storage, migratory wildlife, habitat for threatened and endangered species or priority conservation species, etc.).

Wetland along with stream restoration, and enhancement and preservation will improve localized and downstream water quality by retiring the land from existing and future agricultural uses (i.e., timber management), increasing surface-water retention, and natural stream flow. In addition, habitat will improve for native and migratory wildlife via reforestation, herbaceous cover control, and stream buffer enhancement.

Specifically, the project objectives are to restore, to enhance, and to protect the physical, chemical, and biological functions of a wetland landscape that includes PFW and stream resources:

- Enhancement and preservation of historic and self-sustaining surface hydrology (e.g., levee removal, backfilling artificial drainages, along existing woods roads).
- Restoration and enhancement of 1,165 acres of native PFW through site preparation and reforestation with native forest species.
- Enhance and preserve stream buffer portions as needed: +/-40,605 linear feet of stream on Batiste Creek and Willow Creek and several unnamed tributaries and riparian buffer enhancement.
- Enhance the 91.8 acres (100-foot belt width) of forested riparian creek buffer.
- Ensuring long-term viability and sustainability by implementing specific management strategies such as active and adaptive management, establishment of financial assurances and long-term funding mechanisms.
- Providing long-term protection through the execution of a perpetual conservation easement and establishment of a long-term fund to cover annual expenditures associated with maintenance and management of the Bank.

# 4.0 ECOLOGICAL SUITABILITY OF THE SITE

## 4.1 Historical Ecological Characteristics

Historically, the primary sources of surface water were precipitation, runoff, stream flooding, micro-relief ponding, seasonally perched water tables, and predominance of hydric soils (NRCS 1981). Prior to acquisition by Batiste Woods Mitigation Solutions, the tract was owned by O'Neal Investments, a partner in Batiste Woods Mitigation Solutions. For the past decade, O'Neal Investments has owned and operated the tract as a timber production/timber harvesting operation of southern pine timber. Prior to acquisition by O'Neal Investments, the tract was owned by International Paper Company, who also operated the acreage for timber production/timber harvesting of southern pine timber.

## 4.2 Current Ecological Characteristics

### 4.2.1 Soils

The Bank is mapped as Ba-Beaumont clay, 0 to 1 percent slopes, Es - Estes clay, frequently flooded, Gy - Guyton-Aldine complex, Km - Kemah-Aris complex, and Vd-Bevil silty clay, depressional (attached soils map figure 6). These soils are described as having a ponding frequency of 0 to 15% and drainage classes of somewhat poorly drained. These map units are all listed as having hydric components (NRCS 2015).

### 4.2.2 Vegetation

Small portions of the Bank's acreage (110 Ac.'s) consist of raised planting beds for pine plantation under various stages of growth and management and scrub-shrub wetlands.

These portions of the Bank area have been involved in pine plantation timber production prior to 2000. The site is a mix of a wide variety of vegetative types, including Loblolly Pine, Chinese Tallow.

As,(Attachment A, Figure 3) indicates, the Bank site ranges from pine plantation, to mosaic scrub/emergent wetland, stream fringe wetlands, linear emergent wetlands, intermittent streams, invasive vines and plants, as well as native bottomland hardwoods. Representative upland tree species across the property include: Water Oak, Sweetgum and Loblolly Pine. Representative wetland trees include: Bald Cypress, Overcup Oak, Willow Oak, Water Oak, Laurel Oak, Red Maple, and Black Willow. Undergrowth and mid-story is a mix of Palmetto, Yaupon, American Holly, Blackberry and various grasses and vines.

### 4.2.3 Hydrology

Within the Bank, changes in topographic elevation create sheet flow drainage toward Pine Island Bayou and its unnamed tributaries. In certain parts of the Bank, a surface or subsurface accumulation of clay impedes the downward movement of water and produces periods of saturation and inundation in the upper parts of the soil surface, especially in areas of concave topography.

### 4.2.4 Jurisdictional Wetland Status

The Jurisdictional Determination map (Figure 3) is based upon the approved Jurisdictional Determination (JD) dated May 6, 2016 (SWG-2010-00942; Attachment D).

Per the JD, the wetlands were determined to have more than a speculative or insubstantial effect upon chemical, physical, and/or biological integrity on the downstream traditionally navigable water, Pine Island Bayou and as such the wetlands are subject to federal regulation under Section 404 of the Clean Water Act.

Non Jurisdictional Wetlands:

| | |
|---|---|
| Emergent Wetland | 1.1 Ac. |
| Scrub-Shrub Wetland | 18.37Ac. |
| | 19.47 Ac. |

Jurisdictional Wetlands and Waters:

Wetlands:

| | |
|---|---|
| Forested Wetland | 95.23 Ac. |
| Scrub-Shrub Trib. Wetland | 70.91 Ac. |
| Scrub-Shrub Wetland | 31.57 Ac. |
| Emergent Wetland | 2.78 Ac. |

Stream and Tributaries:

| | |
|---|---|
| Batiste Creek Tributaries: | 2,653' |
| Willow Creek Tributaries: | 3,894' |
| Batiste Creek Channel- | 13,144' |
| Willow Creek E Channel- | 18,674' |
| Willow Creek S Channel- | 2,240' |

40,605 Linear feet-Total (51.18 Acres)

Intermittent Stream with Perennial Pools

## 4.3 General Need

The Bank will restore and enhance forested wetland along with the streams found on land impacted by pine plantation/timber management agricultural improvements. These restoration and enhancement efforts will provide a natural flow of water into the restored portions of the wetlands and streams. All Palustrine Emergent Wetlands will be restored to a Forested Wetland. The dominant land cover type within the Service Area is open land (Attachment B, # 4), which generally equates to forested and emergent habitat being the most common wetland impacts, the Bank will provide wetland mitigation credit to compensate for permitted losses of Waters of the United States (i.e., forested, emergent and stream). Many of these impacts will result from the construction of oil and gas transmission pipelines, supporting facilities (e.g., meter stations), and expansion of facilities such as refineries (INGAA 2014) within the watersheds of the Primary and Secondary Service Areas described in Section 6.1. Additionally, the watershed in which the Bank is located encompasses portions of Jefferson, Liberty, Hardin, Orange, Tyler, Jasper, and Angelina Counties. In general, the proposed Service Area encompasses a major east-west energy transportation corridor which transports products from the Spindletop Basin in Jefferson County to refineries and terminals along the Gulf Coast, primarily to Mt. Belvieu.

Future oil and gas transmission lines will service various fossil fuel processing facilities within this region, particularly along the I-10 corridor from Houston to Beaumont, focusing upon Mt. Belvieu refinery zone. It is estimated that between 2015 and 2035, natural gas pipeline capacity will increase from 4.8 billion cubic feet per day (cf/d) to 10.2 billion cf/d in the Southwest Region (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas; INGAA 2014). The establishment of transmission lines and processing facilities will likely be complimented by localized development activities including industrial, residential, retail, and public works that may require wetland mitigation.

The Bank will offset the cumulative effect of spatially fragmented impacts and consolidate the mitigation into a single, strategic location within the Service Area. The following parameters were considered in the selection of this site for wetland restoration:

- Location: The site is suitable for restoring, jurisdictional wetlands, stream enhancement, and associated upland and stream buffers.
- Mitigation Need: The increasing requests for PFW and stream type habitat within the primary and secondary service areas, which established a need for the mitigation.
- Mitigation Availability: The limited availability of PFW and PSS credits within the primary and secondary service areas.
- Landscape Positioning: The relative low elevation of the site and connection to Pine Island Bayou.
- Hydric Soils: The field documented presence of hydric soils.
- Historic Evidence: The historical presence of PFW as evidenced by historical topographic maps.
- Compatibility: The surrounding land uses consist of forested lands, U.S. Forest Service units, Texas Forest Service units, pasture lands, former rice agricultural fields, and coastal prairies.
- Long-term protection and habitat connectivity: The area between the site and the Gulf of Mexico consists of a complex of various pine plantation forests, former rice fields, tidal marshes, coastal prairies, bottomland hardwoods, grazing pastures, and other types of agricultural production (e.g., wheat and grain).

## 4.4 Wildlife and Habitat Values

The Bank will provide additional habitat within or adjacent to the Neches and Trinity River Basins. Corridor restoration, enhancement, and conservation will facilitate wildlife migration and plant distribution for anticipated transitions associated with predicted climate change.

In terms of migratory birds, the Bank will benefit Neotropical birds migrating through the Neches and Trinity River Basin. Coastal Texas is a major staging and fallout area for Transgulf and Circumgulf -neotropical migratory. Approximately 330 species of migratory birds utilize the Texas Gulf Coast.

Wetland soils of the Bank will be enhanced by increasing soil organic matter, decreasing soil bulk density, increasing hydraulic conductivity, increasing soil saturation potential, and increasing the formation of redoximorphic features. Soil organic carbon is critical to soil reduction which will increase as soil organic material increases from the deposition of leaf litter, coarse woody debris, and decaying root material.

The restored forested wetland plant community will reduce runoff by canopy and leaf litter interception of rainfall and the increased stem density will reduce surface water sheet flow velocities. The result is a reduction in erosion runoff and an increase in soil infiltration.

## 4.5 Technical Feasibility

The construction work required to develop the Bank is routine and feasible. Site preparation will consist of grading as needed of the previous pine plantation sections, reforestation with native shrub/tree species, herbicide treatment for the removal of noxious and invasive plants and tree species. The relatively flat landscape, location of the Bank, and existing current wetland hydrology implies that the Bank is a prime site for wetland restoration, enhancement, and preservation.

Within one mile of the Bank perimeter, approximately 97.8% of the surrounding land use is comprised of agricultural land (pasture/crops), forest, shrub/scrub, and conservation lands. There are residential areas but these occur sporadically and are not highly concentrated.
Given the low level of disturbance anticipated from these compatible land uses, wetland restoration is a feasible and necessary management strategy.

## 5.0 ESTABLISHMENT OF THE MITIGATION BANK

### 5.1 Site Restoration Plan

The site plan to restore, enhance and preserve should yield the following:

169.01 Acres of Riparian Buffer enhancement.

156.82 Acres of Wetland Enhancement Emergent/Scrub-Shrub to Forested Wetland.

841.88 Acres of Wetland restoration.

50.3 Acres of Stream Channel Preservation (40,605 linear feet).

The 169.01 Acres of Riparian buffer to be enhanced will be replanted with native species chosen from the visited reference sites of The Big Thicket National Preserve. 156.82 Acres of emergent/scrub-shrub will have also been replanted with seedlings from the approved planting list as above. The remaining 841.88 acres of upland area consisting of sivicultural regrowth and pine plantation will have the drainage areas removed as necessary to improve soil saturation and slow the drainage of water to the site. The 50.3 Acres (40,605 linear feet of stream channel will have the three stream crossings removed and/or reworked so that stream flow will be improved.

Ecological site restoration and enhancement will be accomplished through conversion of the pine plantation acres back into bottomland hardwood forest. In addition, removal of any artificial drainage control devices and ditches will assist in returning the soil surface to natural topography during the site planting preparation and planting of native wetland species.

Hydrologic restoration and enhancement will increase surface water retention and soil saturation, reduce nonpoint source runoff, and improve water quality through nutrient uptake by vegetation. The plant communities will be restored to PFW, forested upland buffer, and native upland herbaceous communities. The PFW mitigation area will be planted with an assemblage of native, wetland tree and species. Reference sites will be chosen on site and in the Big Thicket National Preserve to ensure appropriate species are chosen. The upland forested buffer will be restored as needed with native species typically found in transition zones from wetland to upland areas. Physical, chemical, or mechanical means will be used to eliminate existing invasive/exotic vegetation (e.g., Chinese tallow tree and other species currently listed by the Texas Invasive Database [TexasInvasives.org]). The Sponsor anticipates that no short or long-term structural management requirements will be required to sustain wetland hydrology.

### 5.1.1 Hydrology Restoration

The site primarily consists of streams (i.e., Batiste Creek, Willow Creek, and unnamed tributaries), streamside buffers, scrub/shrub wetlands, small amounts of emergent wetlands, and forested wetlands. The property has a large watershed, greater than 25,000 acres. The site typically floods 2-3 times per year for lasting approximately a week. Hydrology restoration of the Bank will not require stream channel restoration except where any stream crossings are constructed. Any road drainages will be filled. There are presently no above grade roads so it will not be necessary to return any to natural grade to allow for natural flow of water across the landscape. A detailed description of hydrologic restoration and enhancement or preservation plans, including drawings, will be included in the subsequent Draft Mitigation Banking Instrument (MBI).

### 5.1.2 Site Preparation

Preparation for seedling planting within the PFW, riparian buffer, and upland buffer will be accomplished mostly by herbicide applications and controlled burns. Herbicides will be applied by licensed applicators in accordance with state and federal laws to control invasive species. Following the herbicide application, a controlled burn may be applied where necessary to remove dead plant material.

### 5.1.3 Palustrine Forest Community Restoration

The proposed plant species for reforestation has a wetland indicator status of facultative (FAC), facultative wetland (FACW), or obligate (OBL) per the Atlantic and Gulf Coastal Plain Region (AGCPR) (Lichvar et al. 2014). Species selected either occur in or have a native range encompassing Liberty County or adjacent counties based on NRCS (2014). The planting effort will integrate fast-growing soft mast species with slower-growing hard mast species to allow for greater vertical structural diversity. The integration of fast growing soft mast species mimics succession and provides nursery habitat for late successional hard mast species. The development of an early successional community will promote abiotic and biotic environmental conditions for increasing hard mast seedling survival and growth. Hard mast species will account for approximately 40-60% of the stems planted with the remaining percentage accounted for by soft mast tree species.

The species and quantities for planting chosen are available from commercial nurseries providing localized ecotype seedlings. Stem planting density will be at a rate of at least 302 stems per acre or any planting rate agreed upon by the IRT.

Single stem planting of PFW species will occur the first planting season (December through March) following site preparation. Selected species will be site-appropriate for habitat design, soil-moisture regime, species richness, and commercially available (Attachment B, #1). Ten or more species may be represented and distributed in the planting assemblage with no species comprising more than 25% of the assemblage. To enhance species planting diversity and avoid monotypic plantings, seedlings will be mixed on-site prior to planting.

Any access trails will be maintained at grade and will not interfere with surface hydrology. However, should any of these areas be established thru ROW relinquishment in the future, the Sponsor may request that these credits be removed from the applicable acreage. No adverse effects are anticipated by the continued existence of any open space features.

### 5.1.4 Forested Upland and Stream Buffer Reforestation

The site will be treated with a post-emergent herbicide to prevent further germination of weeds and pasture grasses. With the onset of typical late-fall, early-winter rains, the rows formed along the furrows will settle into the furrow and create ideal seedling planting beds without interrupting surface sheet flow.

The reforestation effort will integrate a mosaic of native, fast-growing, soft-seeded species with slower-growing hard-seeded species to allow for greater vertical structural diversity. Target species for reforestation are listed in (Attachment B, #1). The proposed plant species will be native to the area as described by NRCS (2015).

The seedlings will be planted at a minimum density of 302 stems per acre. It is anticipated that the forests will resemble the existing bottomland hardwood forests which are adjacent to the property as well as the existing forests of the surrounding landscape. The forested stream buffer will be a minimum of 100 feet wide.

### 5.1.5 Stream Enhancement

Stream enhancement will consist of reforestation of the stream bank and buffer areas impacted by past sivicultural practices. These areas will be replanted at the same time as the other areas are across the property. This will help to restabilize the bank and immediate drainage area associated with both creeks and their tributaries.

### 5.1.6 Monitoring and Management

The Sponsor will maintain the Bank following construction and throughout the initial, interim, and long-term monitoring and management periods. The Sponsor will use all prudent efforts - physical, chemical, or mechanical - to eliminate existing noxious and/or invasive vegetation present (i.e., noxious and invasive species listed in the most current Texas Invasives Database [www.texasinvasives.org]). In addition to invasive plant species, the Sponsor will control nuisance, invasive wildlife species such as feral hogs (*Sus scrofa*). Following completion of construction activities, the Bank will be monitored and inspected annually for invasive species colonization and biotic and abiotic factors that affect tree growth. Monitoring will determine if adaptive management measures, such as replanting, need to be considered. The Sponsor anticipates that invasive species control measures will be implemented as-needed (annually, if necessary) over the first five (5) years following construction and again at Year 10.

The Sponsor will continue to monitor the Bank through annual inspections to document the following:

- The effectiveness of control efforts;
- The extent and degree of invasive species present;
- The extent and degree of any herbivory or insect damage
- The extent and degree of adverse climate impacts (i.e., drought);
- Success of reforestation efforts.

Following such monitoring, invasive species control and replanting will be implemented as necessary. The boundaries will be inspected and it is anticipated that boundary maintenance will take place at five (5) year intervals (e.g., gates, signage, fencing, boundary marking, as needed).

## 5.2 Mortgages

A Summary of Title Matters is being prepared and will be provided with the MBI. The acreage associated with any ROW easements and/or Cell Tower encumbrances is considered as non-mitigation acreage – meaning that no mitigation credits for either wetland credit or stream credit will be generated from this acreage. The Sponsor intends that the Conservation Easement described in Section 7.4 will cover any easements and ROW areas, but will not be subordinate to these easements. However, should any of these easements be terminated or relinquished/extinguished, the Conservation Easement will become dominate insuring site protection. An indebtedness mortgage will likely exist at the time that the Conservation Easement is filed. However, the holder of the mortgage will subordinate it in favor of the Conservation Easement upon its execution in the event that the mortgage is not retired prior to the easement filing.

## 5.3 Current Site Risks

The Sponsor does not foresee any hindrances in restoring, enhancing, and preserving the existing hydrological qualities on the Bank. In addition, the Sponsor does not foresee any adverse impacts to the Bank resulting from the continued existence and operation of the neighboring land uses or from the continued use of the Conservation Easement described in 5.2. The site is bordered by agricultural land, forest land, and a few rural residences. Adjacent land ownership and management will not affect the establishment and long-term success of the Bank.

## 5.4 Long-Term Sustainability

Based upon the current, recently-approved Jurisdictional Determination (JD), it is the Corps' assessment that the existing hydrology in wet areas, and the lack of hydrology in the upland areas which has sustained a shrub/scrub vegetative type in some areas, provides for the opportunity of the permitting of a wetland and stream Bank which has jurisdictional wetlands. Long-term viability and sustainability of the Bank is assured by enhancing and preserving the current hydrologic conditions through hydrologic restoration and enhancement and active, adaptive management, including, but not limited to: invasive species control, appropriate monitoring, and long-term maintenance. With regard to surface hydrology, the Sponsor will restore and enhance and preserve the hydrology by removing any drainage improvements, restore and enhance and preserve natural drainage patterns, through PFW restoration and enhancement and preservation, through stream enhancement and preservation, through improvement of the upland buffer by reforestation. Long-term surface hydrology of the Bank will be maintained by localized rainfall and a shallow, seasonally-perched high water table. The Sponsor does not foresee any adverse impacts on neighboring properties resulting from the Bank.

### *5.5 Water Rights*

Per review of the Texas Commission on Environmental Quality's (TCEQ) water rights database, water use is not listed for the proposed Bank (TCEQ 2015) and water use data recorded from 2000 through 2012 did not indicate any water purchases. Furthermore, as restored, the Bank will not require the use of public water or a TCEQ Water Use Permit since the wetlands to be restored by the Bank will not create a reservoir or off-channel reservoirs that artificially store, hold, retain, or divert water from state water sources (i.e., surface or subsurface).

The Sponsor does not anticipate utilizing any construction features on the Bank which direct, divert, or cause the retention of flood waters (i.e., any berms, dikes, etc. will be removed where possible). The hydrologic restoration of the Bank includes filling and leveling of internal drainage and roadway features to natural elevation.

Any water which may naturally flow onto or through the floodplain will not be diverted or retained by any constructed surface features. As such, long-term hydrology maintenance will not depend upon the utilization of water captured from irrigation wells or a Texas public water system. Therefore, water rights will not be required.

# 6.0 PROPOSED GEOGRAPHIC SERVICE AREA AND CREDIT USE

## 6.1 Primary and Secondary Service Areas

The primary and secondary service areas are located within the Western Gulf Coastal Plain Level III Ecoregion. The proposed service area does not extend beyond the administrative boundaries of the CESWG and is entirely within the State of Texas. The primary service area consists of the Pine Island Bayou Cataloguing Unit (Pine Island Bayou: HUC 12020007). The secondary service area consists of the Village Cataloguing Unit (Village: HUC 12020006) and the Lower Neches Cataloguing Unit (Lower Neches: HUC 12020003). All lands owned, leased, or manage by TPWD are excluded from service area coverage.

## 6.2 Credit Use

The PFW mitigation areas will provide credits for forested non-tidal wetland impacts, however any stream credits should not be used for compensation of perennial stream channel impacts equal to or greater the 500 linear feet. The Bank will not be utilized to compensate for any impacts which occur on properties or facilities owned or managed by either the U.S. Fish or Wildlife Service (U.S.F.W.S.), the Texas Parks and Wildlife Department (TPWD), U.S. Forest Service, Texas Forest Service, or the National Park Service (NPS).

# 7.0 OPERATION OF THE PROPOSED MITIGATION BANK

## 7.1 Sponsor Compliance

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

The project Sponsor and Point of Contact is as follows:

**Sponsor:**

Batiste Woods Mitigation Answers, LLC
P.O. Box 217
McHenry, MS 39561
ATTN: Mr. Dan O'Neal
Phone: 601-528-0546
Email: danoneal@yahoo.com

**Point of Contact:**

H & T Environmental Inc.
P.O. Box 239
Elysian Fields, Texas 75639
ATTN: Michael Harris
Phone: 903-633-8224
Email: htenvironmental@eastex.net

## 7.2 Qualifications of the Sponsor

Per 33 CFR S 332.8(d)(2)(vi)., this Section describes the Sponsor's qualifications to successfully complete the proposed Bank. Mr. Dan R. O'Neal has knowledge of the working and requirements of mitigation banks. He has owned and operated mitigation banks in other states such as Mississippi and North Carolina throughout the years. He retired from the USACE years ago and has continued to be successful with his knowledge and education in engineering. BWMA will serve as the Sponsor. BWMA is a land investment and restoration company whose technical staff includes Certified Wildlife Biologists, Professional Wetland Scientists, and Certified Foresters. In addition, BWMA has construction specialists on staff experienced in wetland construction activities such as heavy equipment operation, vegetation establishment, herbicide application, and contractor management.

## 7.3 Proposed Long-Term Ownership and Management Responsibilities

BWMA intends to serve as the owner, sponsor, long-term manager, and steward of the Bank. The Sponsor may appoint a long-term steward if such appointment is approved by the CESWG per 33 CFR S 332.7 (u)(2). The anticipated long-term management will consist of monitoring, invasive species control, prescribed fire, boundary maintenance, and site protection.

## 7.4 Site Protection

The Land Owner and Sponsor (or Long-Term Steward/Owner), or its heirs, assigns, or purchasers shall be responsible for protecting lands contained within the Bank in perpetuity. To provide such protection, the Owner shall execute a perpetual Conservation Easement (Texas Law, Natural Resources Code, Title 8 Chapter 183, and Subchapter A) on all acreage identified as the Bank and the Conservation Easement will be recorded in the Title Records of Liberty County, Texas (Texas Legislature 2005).

The Conservation Easement will be granted to and held by a qualified, non-for-profit land trust (Holder) whose mission is to retain or protect the land's natural habitat, wildlife, open-space, scenic, educational, recreational, historical, or cultural values.

The third party non-profit group will be detailed in the upcoming MBI. In accordance with 33 CFR S 332.7 (a)(3), the easement shall contain a provision requiring a sixty (60) day advance notification to the CESWG before action is taken to void or modify the Easement agreement – including transfer of title.

The Conservation Easement will protect the Bank from activities inconsistent with the purpose of preserving the conservation values of the restored area. The Owner, its heirs, assigns, or purchasers and the Sponsor/Land Steward Entity shall be responsible for protecting lands contained within the Bank in perpetuity in accordance with the terms of the Conservation Easement. The Conservation Easement will protect the Bank from development, or any other activity contrary to its use as a wetland mitigation bank.

The Holder will be accredited by the National Land Trust Alliance and is a member of the Texas Land Trust Council. The Holder will conduct annual inspections to verify that there are no activities occurring on the Bank which are inconsistent with the purpose of preserving the conservation values of the restored area. The Holder of the Bank's Conservation Easement will be finalized prior to final submission of the draft MBI.

## 7.5 Long-Term Strategy

A long-term management plan will be included with the draft MBI and will detail long-term management needs, costs, and identify a funding mechanism in accordance with 33 CFR S 332.7(d). The Sponsor (or Long-Term Steward) and the Owner (or its heirs, assigns, or purchasers) shall be responsible for protecting lands contained within the Bank in perpetuity. The Sponsor will establish the "Long-Term Land Management and Maintenance Endowment" (LTMME) to insure adequate funding is available to cover future LTMME costs.

The Sponsor will create a Mitigation Bank Endowment Agreement to ensure sufficient long-term funding is available for perpetual maintenance and protection of the Bank.

Long-term management will consist of monitoring, vegetation management, invasive species control, controlled burning, boundary maintenance, site protection, and the funding of such activities. Invasive species control efforts will continue as a part of long-term management.

The PFW mitigation area will be managed to maintain or increase the biological, chemical, and physical wetland functions of the Bank, which will provide wetland habitat capable of supporting populations for priority wildlife species (e.g., native wildlife, Neotropical migrants and bats). An example of suitable PFW management for such purposes is any activity which encourages the development of snags and course woody debris (CWD). Snags and CWD (i.e., deadwood) serve as microhabitat for various species of reptiles and amphibians, insects, beetles, and termites which are an important food source for Neotropicals and various other wildlife species. Additionally, snags are also beneficial to various several species of cavity-nesting birds such as downy woodpeckers (*Picoides pubescens*), hairy woodpeckers (*Picoides villosus*), red-bellied woodpeckers (Melanerpes carolinus), and white-breasted nuthatches (*Sitta canadensis*). The encouragement of habitat which supports these bird species is beneficial for long-term forest health, as studies show these species are beneficial in slowing the spread of emerald ash borers (*Agrilus planipennis*), an invasive species which could pose a risk to ash species (*Fraxinus spp*.) in the near future. Deadwood is an important component for various wetland functions such as nutrient cycling and provides habitat for various species of invertebrates, amphibians, and reptiles (Brinson et al. 1995, NRCS 2003). Loeb (2013) states that snags, particularly those large in size and located or positioned in clusters, are important in providing roosting habitat for various tree bats.

The streams and associated buffer areas will be managed to maintain or increase the inherent functions of a viable intermittent stream and riparian buffer (i.e., hydrologic, hydraulic, geomorphological physiochemical, and biological) [U.S. Fish and Wildlife Service 2011].

Generally stated, stream and buffer restoration will increase and maintain the following intermittent stream functions:

- *Hydrology* (transportation of water from the watershed to the channel): maintain a balance between rainfall and runoff, natural flooding frequency, and flow duration.

- *Geomorphological (*transportation of wood and sediment to create diverse bed forms and dynamic equilibrium): improve channel stability to reduce stream bank erosion.

- *Physiochemical (*temperature regulation and the processing of organic matter, regulating temperature extremes, and recycling nutrients.

- *Biological (*maintenance of plant and animal communities*):* improve intermittent stream and riparian habitats.

## 8.0 CONCLUSION

In conclusion, the Bank has a high potential for successfully restoring 1,165 acres of PFW and 40,605 linear feet of stream restoration. The cessation of agricultural land use (pine plantation), restoration of natural hydrology, and rehabilitation and re-establishment of PFW habitats, and stream enhancement will improve watershed quality by reducing non-point source runoff, increasing eco-system plant diversity, and increasing habitat for native and migratory wildlife species.

## 9.0 REFERENCES


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U.S. Department of Interior. U.S. National Park Service, Big Thickett National Preserve.

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