RIVERINE FORESTED WETLAND

PERMITTEE RESPONSIBLE MITIGATION PLAN

FRACTIONATOR IX

CHAMBERS COUNTY, TEXAS

Prepared for

LONE STAR NGL MONT BELVIEU, LP

SEPTEMBER 25, 2019

PREPARED BY:

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1.0 Introduction

Delta Land Services, LLC (DLS) presents this riverine forested wetland (PFO) Permittee Responsible Mitigation Plan (PRMP) for the compensation of unavoidable, permanent impacts to approximately 37.72 acres of PFO within the U.S. Army Corps of Engineers (USACE) Galveston District (CESWG). Lone Star NGL Mont Belvieu, LP (Lone Star or Permittee) is seeking the Permit for the proposed construction of a natural gas processing and distilling plan called Fractionator IX (Project), which is located adjacent to their existing facility approximately 1.5 miles northeast of the intersection of East Wallisville Road and Sjolander Drive in Mont Belvieu within Chambers County, Texas.

The Permittee will construct Fractionator IX along with all associated amenities and other necessary activities, including but not limited to facility structures, parking lots, transmission lines, and installation of the storm-water drainage system. The purpose of the proposed activity is to construct a natural gas processing and distilling plant or fractionator. The parcel for this project will be developed to meet the specific needs of the Permittee and demands of the oil and gas market.

The Project's wetland impacts are located in the North Galveston Bay Subbasin (Hydrologic Unit Code [HUC] 12040203) in Chambers County, Texas. Ecologically, the impacts are located within the Northern Humid Gulf Coastal Plain Level IV Ecoregion of the Western Gulf Coast Plain Level III Ecoregion (Seaber et al. 1987, Griffith et al. 2007, EPA 2012) [Attachment A, Figure 1]. More specifically, the Project is located at centerpoint latitude 29.841569˚ North and longitude 94.929813˚ West (North American Datum [NAD83]).

The preparation of this PRMP was guided by USACE regulations for compensatory mitigation for losses of aquatic resources, codified in 33 CFR § 332. More specifically, the elements of the PRMP were designed to satisfy the requirements of 33 CFR § 332.4(c)(2)-(14). DLS, acting as the mitigation provider for the Permittee under this PRMP, will implement, monitor, and provide long-term management of the Permittee Responsible Mitigation Area (PRMA) set forth in this Plan as described in 33 CFR § 332.3(l). The assessment of unavoidable impacts and the proposed PFO PRMA utilized the USACE Galveston District (CESWG) Riverine Forested Interim Hydrogeomorphic Model (iHGM).

Lone Star conducted a mitigation credit availability screening to determine if sufficient mitigation credits were availability for purchase to compensate for Project wetland impacts. As part of this screening, all existing mitigation banks with either a primary or secondary service area encompassing the proposed Project location were contacted to determine mitigation credit availability. The proposed project is located within the primary service area of the Gin City Mitigation Bank. At the time of permit submittal, the USACE Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS), indicated that Gin City had sufficient credit availability to offset Project wetland impacts. However due to recent credit reservations and executed credit transactions, Gin City is fully reserved and does not have available credit to offset the Project's wetland impacts. Thus, this PRMP was prepared of offset impacts to PFO wetlands.

A 1:1 ratio (i.e., impact function to mitigation function ratio) was utilized to determine the

mitigation requirements as the impacts and PRMA are both located in the North Galveston Bay HUC (Attachment A, Figure 1). The mitigation restoration acreage, as determined by the iHGM is 38.70 acres (Table 1 and Attachment C). By the end of Year 15, 38.70 acres of PFO wetlands will be restored and perpetually protected.

1.1 Mitigation Property Location

The 38.70-acre PRMA is adjacent to Cedar Bayou and is located in the 100-year floodplain (Attachment A, Figure 2). The PRMA is located approximately 6.6 miles northeast of Crosby, Texas within the North Galveston Bay Subbasin in the Northern Humid Gulf Coastal Plain Level IV Ecoregion within the Western Gulf Coast Plain Level III Ecoregion (Seaber et al. 1987, Griffith et al. 2007, EPA 2012).

To access the PRMA from the U.S. Interstate Highway (IH) 10 / U.S. Highway (US) 59 interchange in Houston, TX, proceed east on IH 10 for approximately 4.8 miles then exist east onto US 90 (Crosby Freeway) and proceed for 13.9 miles and turn left/north onto Farm-to-Market (FM) 2100. Travel north for approximately 6.2 miles, turn right/east onto East Stroker Road, proceed east for 2.3 miles then turn left/north onto Ramsey Road, proceed north for 2.7 miles to the access gate of the property, which is located on the right/east side of Ramsey Road.

1.2 Property Ownership and Responsible Party Qualifications

Per 33 CFR § 332.8(d)(2)(vi.), this section describes DLS's qualifications to successfully complete the proposed PRMA. Ironwood Holdings LLC owns the PRMA and the property encompassing the PRMA. Established in 2009, DLS is a land management and restoration company whose technical staff includes Certified Ecological Restoration Practitioners, Certified Foresters, Certified Wildlife Biologists, and Professional Wetland Scientists. In addition, DLS has construction specialists on staff experienced in wetland construction activities such as heavy equipment operation, vegetation establishment, herbicide application, and contractor management. The complete biography of DLS and personnel biographies are available at www.deltaland-services.com.

DLS currently operates 15 approved wetland mitigation banks and 5 approved amendments within four USACE Districts totaling 7,925.7 acres which include 43,044.9 linear feet of stream restoration. These Districts include Vicksburg (MVK), New Orleans (MVN), Fort Worth (SWF), and SWG. In addition to the banks referenced above, DLS serves as the responsible party for the establishment and maintenance of 3,494.1 acres of wetlands and 8,251.0 linear feet of stream on 30 approved Permittee-Responsible Mitigation (PRM) areas within the MVN, MVK and SWG.

1.3 Description of the Property

The PRMA is a regularly formed land tract and is located within Cedar Bayou's broad floodplain. The center point of the PRMA is located at latitude 30.002694˚ North and longitude 95.042128˚ West (NAD83). The PRMA perimeter coordinates are shown in Table 1 beginning at the northwest corner and proceeding clockwise.

Table 1. PRMA Perimeter Coordinates

Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
-95.04111423	30.00223531	-95.04310981	30.00086217	-95.04401148	30.00503914
-95.04111419	30.00222037	-95.0438732	30.00086376	-95.04363656	30.00504543
-95.04106178	30.00222024	-95.0438713	30.00100586	-95.04359343	30.00504615
-95.04045063	30.00221830	-95.04416115	30.00114243	-95.04304145	30.00505541
-95.04044999	30.00221830	-95.04426276	30.00124538	-95.04297213	30.00505658
-95.04004622	30.00221744	-95.04435639	30.00119339	-95.04147193	30.00508174
-95.03999382	30.00221733	-95.04453061	30.00128240	-95.04143158	30.00508241
-95.03992395	30.00221718	-95.04455953	30.00136594	-95.04141703	30.00508266
-95.03981222	30.00221694	-95.04405804	30.00136024	-95.04141628	30.00508039
-95.03974212	30.00221679	-95.04401668	30.00135977	-95.04141562	30.00507895
-95.03971768	30.00221674	-95.04388089	30.00135823	-95.04140779	30.00506262
-95.03953494	30.00221636	-95.04388305	30.00140027	-95.04121106	30.00465218
-95.03916304	30.00221557	-95.04388388	30.00141628	-95.04119074	30.00460980
-95.03915993	30.00085385	-95.04388418	30.00142213	-95.04114522	30.00451482
-95.03971915	30.00085503	-95.04388455	30.00142932	-95.04113320	30.00362113
-95.03981909	30.00085525	-95.04388486	30.00143530	-95.04113222	30.00354818
-95.03987926	30.00085537	-95.04388514	30.00144072	-95.04112842	30.00326528
-95.03992414	30.00085547	-95.04388528	30.00144356	-95.04112800	30.00323382
-95.04001121	30.00085565	-95.04389889	30.00170793	-95.04112052	30.00267751
-95.04044999	30.00085658	-95.04391162	30.00195523	-95.04111992	30.00263326
-95.04116181	30.00085808	-95.04392725	30.00225873	-95.04111683	30.00240307
-95.04124772	30.00085899	-95.04406975	30.00502651		
-95.04158968	30.00086262	-95.04406998	30.00503815		

* PRMA coordinates begin in the northwest corner and proceed clockwise.

1.4 Recorded Liens, Encumbrances, Easements, Servitudes or Restrictions

The PRMA is not encumbered by easements or rights-of-ways (ROW). There are no other recorded liens, encumbrances, easements, servitudes or other surface restrictions applicable to the PRMA. The owner of the PRMA does not own the mineral rights. DLS has agreed with the previous owner, whom owns the minerals, to set aside a 5-acre mineral drill pad outside of the PRMA. The drill reserve is located approximatley 800 feet east of the PRMA. If needed, future mineral extraction would occur on the drill reserve; thus, the PRMA should not be impacted by future mineral/drilling activities.

2.0 Goal and Objective

The goal of this PRMP is to restore[1] (rehabilitate[2]) 8.20 acres of PFO wetlands and re-establish[3] 30.50 acres of PFO wetland located in the North Galveston Bay Watershed within the Northern Humid Gulf Coastal Prairies Level IV Ecoregion (Figure 3).

To meet the goals of PFO restoration, the objectives will consist of the following:

- permanent cessation of agricultural practices and mowing,
- removal and control of pasture grasses (e.g., Bermuda grass [*Cynodon dactylon*]) and invasive species (e.g., Chinese tallowtree [*Triadica sebifera*][4]),
- hydrology restoration consisting of reduce soil compaction, plugging of agricultural ditches, and filling drainage laterals
- planting 38.70 acres with native tree and shrub species,
- construct, establish, and provide long-term maintenance by establishing the appropriate financial escrow accounts, and
- protect the PRMA under a perpetual conservation easement.

Rehabilitating the wetland forest within the PRMA will enhance the wetland functions discussed in Section 2.1.

2.1 Aquatic Resource Type and Functions Restored

Implementation of the proposed PRMA will rehabilitate 8.20 acres and re-establish 30.50 acres of PFO wetland within the North Galveston Bay watershed. The PRMA will be restored to historic PFO wetland conditions to offset impacts to aquatic resources associated with the permit described in Section 1.0.

1. Physical - Temporary Storage and Detention of Surface Water (TSSW) – the restored wetlands will provide temporary water storage during rainfall events.
2. Biological - Maintenance of Plant and Animal Communities (MPAC) – the restored wetlands will serve as habitat for native wildlife and Nearctic-Neotropical migratory species.
3. Chemical - Removal and Sequestration of Elements and Compounds (RSEC) – the restored wetlands will remove sediments from surface water during periods of rainfall and runoff.

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

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

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

[4] The aforementioned and subsequent plant scientific nomenclature is from Lichvar et al. (2016).

2.2 Watershed and Ecological Contributions

The PRMA and impacts are located within the ecologically important Galveston Bay watershed, which lies in the Coastal Plain physiographic province in the subtropical climate zone. The watershed in which the impacts and the PRMA are situated has experienced tremendous industrial and residential growth in recent years due to the close proximity to the City of Houston. Houston-Galveston Area Council projects over a 46% population increase in Harris County by 2045 (HGAC 2017); the eastern portion of Harris County comprises approximately half of the North Galveston Bay watershed. Additionally, the site restoration is consistent with and helps the Cedar Bayou Watershed Partnership achieve the water quality goals stated in the 2015 *Cedar Bayou Watershed Protection Plan* (Cedar Bayou Watershed Partnership 2015).

The existing conditions at the PRMA are degraded for the following reasons: historic grazing, land leveling, construction of drainage ditches and small laterals, and the spread of nuisance and exotic plant species. The restored PRMA after planting will re-establish or rehabilitate the early successional functions of a forested ecosystem within the Cedar Bayou watershed. Currently, the site has been manipulated to move water quickly offsite into Cedar Bayou. The restored wetland forests will increase onsite stormwater / floodwater storage by increasing the frequency and duration of inundation. This increase will allow sediments to settle in the plant community and slow the flow of stormwater entering Cedar Bayou. Additionally, the site has been used for long-term cattle grazing that has resulted in overgrazing, soil compaction, mineral fertilization, and excessive fecal bacteria (*Escherichia coli* [*E. coli*]). The cessation of cattle grazing, hydrology restoration, and afforestation will increase Cedar Bayou water clarity, decrease nitrogen and phosphorous stream pollution, and reduce *E. coli* levels. Furthermore, soil compaction reduces plant community productivity by limiting / weakening root functions; thus, leading to poor infiltration rates and increase non-point source runoff into Cedar Bayou. Lastly, afforestation will increase vertical plant structure within the PRMA and will increase the quality of wildlife habitat via the restoration of a native trophic structure (aquatic ecosystem), which does not exist under the current land use (i.e., non-native forage production and overgrazing).

Lastly, from 1950-2002, over 46,900 acres of freshwater and estuarine wetlands have been lost in the Galveston Bay watershed (DallaRosa and Pulich 2005). As a result, the Galveston Bay Estuary Program (GBEP) is beginning to focus on a more comprehensive watershed management and realizing the importance of inland resources on the Galveston Bay estuary (DallaRosa and Pulich 2005). Restoration of the PRMA will provide for contributions to water quality, stormwater retention, and habitat for fish, wildlife, and migratory birds. The shores of the Gulf of Mexico provide critical stopover habitat for approximately 296 nearctic-neotropical migratory species. The Gulf Coast Bird Observatory has documented the importance of migratory bird habitat and the need to protect and enhance stopover areas near the Gulf Coast (Gulf Coast Bird Observatory 2016). The restoration of this PRMA will increase the forested acreage in the Galveston Bay watershed as well as ensure long-term conservation and protection of the resource associated with this landscape ecosystem.

3.0 Site Selection

The proposed wetland impacts are located in the primary service area of Gin City (SWG-2011-01181), and Gin City has the appropriate credit type (Riverine Forested). However due to recent credit reservations and executed transactions, Gin City does not have sufficient riverine forested credits available to offset impacts as a result of the proposed Project. Additionally, Gulf Coastal Plains also services the watershed, but does not have the appropriate credit type; thus, no in-kind credits are available for purchase at Gulf Coastal Plains. Therefore, since no approved bank with available in-kind credits or an approved in-lieu fee program exists, the Permittee proceeded with a strategy of pursuing an offsite PRM under and in accordance with 33 CFR § 332.3(b). An onsite PRM is not feasible due to the lack of available land; the Permittee has future plans of full site development, and no adjacent undeveloped land is available for purchase.

The nature and location of the PRMA within the landscape provides a high degree of confidence for successful restoration. The PRMA is highly suitable and restorable as functional PFO habitat. The rehabilitation portion of the PRMA provides an existing degraded wetland area that can be restored through plugging a drainage ditch and native hardwood plantings. The re-establishment area exhibits positive wetland indicators for both wetland hydrology and hydric soils, only lacking wetland vegetation due to pasture grass management. Through the same activities conducted on the rehabilitation area, the wetland functions would be restored with routine restoration activities in the re-establishment portion of the PRMA. The sustainability of the restored PRMA will be driven by rainfall and localized watershed runoff (re-established sheet flow from the northeast). Therefore, hydrologic rehabilitation will utilize natural processes (passive water flow) and will not rely on active water management (i.e., pumping, diversion, impoundment or removal of water through artificial means from a river, stream or reservoir).

Additionally, the site is adjacent to Gin City Mitigation Bank and another PRMA (SWG-2017-00254). The restoration of this property would provide additional continuous restored habitat along Cedar Bayou, increasing the conservation footprint in the North Galveston Bay watershed. The landscape position, soil types, and location in the floodway and 100-year floodplain are similar to the Gin City Mitigation Bank, proving this site should be ideal for wetland restoration.

4.0 Site Protection Instrument

Ironwood Holdings, LLC (Land Owner) will place a perpetual conservation easement covering the PRMA to a Conservation Easement Holder (Holder) in accordance with Chapter 183, Subchapter A of the Texas Natural Resources Code. Pursuant to 33 CFR § 332.7(a)(5), the Owner, acting through the Permittee, will seek CESWG approval of the conservation easement either in advance of or concurrently with the commencement of the permitted activity. Furthermore, in accordance with 33 CFR § 332.7(a)(3), the conservation easement will contain a provision requiring 60-day advance notification to the CESWG district engineer before any action is taken to void or modify the easement, including the transfer of title to another party.

Texas Land Conservancy has been identified as the Holder for the conservation easement. Texas Land Conservancy is a non-profit conservation organization that is accredited by the National Land Trust Alliance and is a member of the Texas Land Trust Council. Texas Land Conservancy will

conduct annual inspections to verify that there are no activities occurring on the PRMA which are inconsistent with the purpose of preserving the conservation values of the restored area.

After recordation in the real property records of Harris County, a copy of the recorded conservation easement, clearly showing the book, page, and date of filing, will be provided to the CESWG. In addition to the regular reporting, compliance with the terms and conditions of the easement will be verified by the Holder annually by field monitoring and reporting. Upon execution of the conservation easement previously described, the Holder will hold and enforce the conservation easement placed on the PRMA, protecting the site in perpetuity as a PFO conservation site. The Permittee will also be responsible for protecting lands contained in the PRMA in perpetuity in accordance with the terms of the conservation easement and PRMP, unless the lands are transferred or sold to a state or federal resource agency or non-profit conservation organization pursuant to 33 CFR § 332.7(d)(1).

5.0 Mitigation Area Baseline Information

The PRMA currently consists of grazing pasture along Cedar Bayou. Following the guidelines of the U. S. Army Corps of Engineers 1987 Wetland Delineation Manual (USACE 1987) and U.S. Army Corps of Engineers Regional Supplement for the Atlantic and Gulf Coastal Plain (AGCP Regional Supplement; USACE 2010), wetland delineation data was collected from the entire 169.6-acre tract. The wetland delineation for the entire tract is included in Attachment D. DLS requested a jurisdictional determination from the CESWG on January 4, 2018 (SWG-2018-00324). The wetland delineation stated the subject property contains 34.7 acres of waters of the United States. The PRMA is partially located in the delineated wetland (8.20 acres of rehabilitation). The delineated wetland is considered jurisdictional due to its adjacency to Cedar Bayou and location in Cedar Bayou's 100-year floodplain and floodway (Attachment A, Figure 3).

5.1 Land Use

5.1.1 Historical Land Use

A portion of the PRMA has been in agricultural production since the 1940's, with the southwestern portions still forested in the 1940's. In the 1950's the entire tract was placed into agricultural production (cattle grazing) and has remained in cattle production until present day.

5.1.2 Current Land Use

The majority of the open land in the vicinity of the mitigation tract, including the PRMA, is used for agricultural production (e.g., sod, livestock, commodity crop, etc.). The PRMA has been in cattle (grazing) production since the 1950's. Opportunistic herbaceous wetland species have colonized the rehabilitation portion of the PRMA.

5.2 Soils

The PRMA soils consist of Beaumont clay, 0 to 1 percent slopes (BeaA), which is a poorly drained soil with an 85 percent hydric component and League clay, 0 to 1 percent slopes (LeaA), which is

a somewhat poorly drained soil with a 10 percent hydric component (NRCS 2018). During the wetland delineation, two data points (DP) were recorded within the PRMA, one was collected adjacent to the PFO rehabilitation area (DP 10), which occurs in the same contiguous wetland the crosses the PRMA, and one was collected within the PFO re-establishment area (DP 11). Both DPs contained hydric soil indicators (Depleted Matrix; F3) [Attachment D].

5.3 Hydrology

The average annual rainfall in Harris County is approximately 49.8 inches (NOAA, National Weather Service 2010), and the primary hydrological influences on the PRMA are rainfall, ponding, and occasional overbank flooding from Cedar Bayou. The PRMA is located along the northern edge of Cedar Bayou its remnant riparian forest. A drainage ditch traverses the southwestern portion of the PRMA, and another drainage ditch is located along the northern boundary and carries stormwater west until the ditch flows into the southwestern drainage ditch (Attachment A, Figure 4). The southwest ditch then carries stormwater runoff into Cedar Bayou south of the PRMA. Additionally, to improve grazing forage, the property has been graded and levelled to drain water south to Cedar Bayou. A small depression (rehabilitation portion) exists in the southwest corner of the PRMA, which ponds water during the wetter months. The data point (DP 10) in the rehabilitation portion of the PRMA had at a minimum of two primary hydrology indicators, which consisted of Saturation (A3) and Oxidized Rhizospheres along Living Roots (C3). DLS biologists observed one secondary wetland hydrology indicator at DP 10, FAC-Neutral Test (D5). One primary indicator (C3) was observed at DP 11, which occurs within the re-establishment area.

5.4 Vegetation

The dominant vegetation within the PFO rehabilitation area primarily consists of facultative (FAC) or wetter (FACW, OBL) plant species including jointed flatsedge (*Cyperus articulatus*), common buttonweed (*Diodia virginiana*), and needle spikerush (*Eleocharis acicularis*). Common species observed within the PFO re-establishment portion of the PRMA included marsh flatsedge (*Cyperus pseudovegetus*), bahaiagrass (*Paspalum notatum*), and smut grass *(Sporobolus indicus)*.

6.0 Determination of Compensatory Mitigation Requirement

The Permittee and DLS used the hydrogeomorphic (HGM) approach to assess the functions of impacted wetlands versus the functions restored wetlands associated with the Project. Specifically, the SWG Riverine Forested iHGM model was used to calculate the number of lost functions at the impact site and the number of functions proposed to be generated at the PRMA. This model uses several variables to assess three main functions that best describe and measure forested wetland health in the region:

1. Physical - Temporary Storage and Detention of Surface Water
2. Biological - Maintenance of Plant and Animal Communities
3. Chemical - Removal and Sequestration of Elements and Compounds

BIO-WEST, Inc, the Permittee's agent, provided iHGM summary data for the impact site shown below in Table 2. DLS provided the baseline iHGM data and proposed functional lift for the PRMA (Attachment C). For each impacted wetland and the restoration portion of the PRMA (38.70 acres), the model variables were scored to determine the functional capacity index (FCI) and functional capacity unit (FCU). The impact site and the PRMA are located within the same watershed; therefore, a 1:1 ratio was applied to the mitigation requirements. To determine the restoration acreage required for the impacts, the sum of each individual impacted function/FCU was divided by the corresponding restoration PRMA FCI, which calculated the mitigation acres required for each individual function lost (Table 2). The highest calculated acreage was used to determine the number of mitigation acres required to offset the Project impacts. Based on these calculations, the restoration of a minimum of 38.70 acres is required to compensate for the 37.72 acres of PFO wetland impacts.

Table 2. Wetland Impacts by Acreage and Function

Function	Wetland Impact Acreage	Impact Functional Capacity Units (FCUs)
PFO Impacts		
TSSW	37.72	21.884
MPAC	37.72	24.062
RSEC	37.72	23.013

Per Tables 3 and 4 below, the PRMA will provide an overall increase in each function.

Table 3. Wetland Mitigation by Acreage and Function

Function	Restoration Acreage	Restored Functional Capacity Index (FCI) Lift	Restored Functional Capacity Units (FCUs)
PFO Rehabilitation			
TSSW	8.20	0.425	3.488
MPAC	8.20	0.579	4.749
RSEC	8.20	0.387	3.171
PFO Re-establishment			
TSSW	30.50	0.606	18.469
MPAC	30.50	0.779	23.765
RSEC	30.50	0.653	19.927
PRM Acreage Total			**38.70**

Table 4. Wetland Impacts and Wetland Mitigation Summary by Acreage/Function

Impact/Restoration	Acreage	TSSW FCUs	MPAC FCUs	RSEC FCUs
PFO Impacts Summary				
PFO Impacts	37.72	21.884	24.062	23.013
PFO Mitigation Summary				
PFO Rehabilitation	8.20	3.488	4.749	3.171
PFO Re-establishment	30.50	18.469	23.765	19.927
Subtotal	**38.70**	**21.957**	**28.514**	**23.098**
Net Gain in Acreage/Function	***0.98***	***0.377***	***4.585***	***0.392***

The PFO iHGM workbooks include the spreadsheet models for the total PRMA Lift. There are two PFO workbooks (rehabilitation and re-establishment), both of which include the PRMA baseline (Year 0), PRMA Year 4 lift, and PRMA Year 10 lift (Attachment C).

7.0 Mitigation Work Plan

7.1 Hydrology Restoration

Prior to the commencement of mitigation work, all agricultural activities will cease. In the current condition, the PRMA rehabilitation area and re-establishment areas both exhibit self-sustaining hydrology as indicated by the data collected from the wetland datapoints. The ditch that traverses the southwest portion of the PRMA will be plugged to increase wetland hydrology across the site. Additionally, a north perimeter ditch will be breached in the area of re-establishment to allow water flow across the re-establishment portion of the PRMA during rainfall events. The internal access road along the north portion of the PRMA will be removed and returned to grade. Following the cessation of agricultural activities and removal of major drainage improvements, the PRMA will be disked multiple times to 1) reduce surface compaction, 2) eliminate competition from pasture grasses, and 3) level drainage laterals to remove surface flow obstacles and allow sheet flow (Figures 4 and 5). Lastly, due to extreme land leveling practices that have removed all depressions and effectively directed stormwater runoff to Cedar Bayou, the site no longer ponds water for long durations. Based on the oxidized rhizospheres and depleted soil matrix observed during the wetland delineation, the soils stay saturated for sufficient durations to exhibit wetland hydrology and hydric soils. Since the site has been manipulated to prevent ponding, three water attenuation bars will be constructed to increase the duration of ponding. The water attenuators will be no higher than 6 inches in height and will be gapped to allow stormwater to pass through during heavy rainfall. No additional material will be used to construct the attenuators, all material will be borrowed onsite.

The soil surface will be subsoiled (i.e., ripped) to a depth of 14 to 16 inches using a straight shank Eco-Till™ ripper. Allen et al. (2000) suggests ripping of compacted soils will increase water infiltration. Ripped furrows will be spaced 10 feet apart to correspond with plant spacing. The straight shank minimizes surface soil disturbance as opposed to a parabolic shank, which may leave air pockets below the surface. The ripper will have an attachment immediately behind the

shank, which will create a slightly elevated row of loose soil no greater than 6 inches above grade. This loose soil will settle back into the rip to ensure the rip seals and minimizes the risk of root exposure to air. Ripping will be conducted in the late summer-fall (i.e., August through October). Immediately following subsoiling, a pre-emergent herbicide will be applied in a four-foot band along each ripped furrow. Due to inherent problems of ripping and disking during wet periods on heavy clay soils, this work is planned during dry periods in the late summer and fall.

7.2 Restoration of Plant Community

The PRMA's historic PFO wetland community will be re-established by planting a mixture of native bottomland hardwood seedlings (i.e., hard mast and soft mast). The selection of planting species was based on species observed within the adjacent forested wetlands located further south along Cedar Bayou.

Planted hard and soft mast seedlings will consist of the species and percentages listed in Attachment E. The exact species and quantities for planting will be determined by the availability of such species from commercial nurseries providing localized ecotype seedlings, where commercially available, species will be obtained within 50 miles of the PRMA drainage basin. During the planting season (January to February), an aggregate of 436 hardwood seedlings will be planted per acre (i.e., hard and soft mast). Hard and soft mast seedlings will be pre-mixed and planted at approximately 10 x 10-foot spacing down the ripped furrows.

For herbaceous and grass species control after planting, a pre-emergent herbicide and/or disking may be used to reduce plant competition. Following stem planting but prior to the planted seedlings breaking dormancy (i.e., visible signs of budding), a second application of a pre-emergent herbicide may be applied. Side disking may be utilized to reduce herbaceous competition within 8 to 10 inches along each seedling row. A second disking between the seedling rows may be employed in year two.

8.0 Maintenance Plan

The PRMA will be monitored and maintained by the Permittee. The Permittee will commit to restore the wetland functions and maintain wetland habitats in accordance with the provisions in this PRMP, which includes submitting project plans, annual monitoring reports, and adaptive management contingencies for the PRMA.

Upon or after tree canopy closure, forest management required to control disease or insect infestation will be performed, if such activities are needed to maintain or enhance the ecological value of the PRMA; the Permittee shall perform these forest management activities. Furthermore, measures to control the encroachment of exotic/invasive vegetation after operation shall be implemented as needed. If required to improve forest stand health, thinning in the PRMA may be performed; this activity would be conducted in coordination with and require prior approval from the CESWG.

9.0 Performance Standards

The following outlines the performance standards for the re-establishment and rehabilitation mitigation areas of the PRMA with a native, facultative or wetter, PFO community and the control of invasive species within the re-establishment and rehabilitation mitigation areas.

9.1 Initial Success Criteria (Year 1)

9.1.1 Hydrology

Ground surface elevations must be conducive to the re-establishment of PFO vegetation and the maintenance of hydric soil characteristics. All alterations of the natural topography that have affected the duration and coverage of surface water have been removed or otherwise rendered ineffective as discussed in Section 7.1.

9.1.2 Vegetation

A minimum of 151 planted seedlings per acre must survive through the end of the second spring following the planting (i.e., year 1) for both PFO rehabilitation and re-establishment. Those surviving seedlings must be representative both in species composition and percentage identified in Section 7.2. This criterion will apply to initial plantings, as well as any subsequent replanting implemented to meet this requirement.

9.2 Interim Success Criteria (Year 3 and Year 5)

9.2.1 Hydrology

By Year 3 or two years following attainment of the one-year performance criteria, site hydrology for both PFO rehabilitation and re-establishment mitigation areas will be restored such that the PRMA meets the wetland criterion as described in the 1987 Manual (USACE 1987) and AGCP Regional Supplement (USACE 2010). Data demonstrating the presence of wetland hydrology will be collected and submitted to the CESWG in the monitoring report. Again, in Year 5, the PRMA must exhibit positive wetland hydrology criterion.

9.2.2 Vegetation

For PFO rehabilitation and re-establishment, a minimum of 151 seedlings/saplings per acre must be present at the end of the second year (i.e., year three) following successful attainment of the one-year survivorship criteria. Trees, saplings, and seedlings established through natural recruitment may be included in this tally. Surviving hard mast seedlings should be representative of the species composition and percentage identified in Section 7.2. Introduced/exotic species may not be included in this tally.

By Year 5, four years following successful attainment of the Year 1 survivorship criteria, the PRMA will be virtually free of introduced vegetation (i.e., approximately 5% or less on an acre-by-acre basis). Developing plant community must exhibit characteristics and diversity indicative of a viable

native PFO community and exhibit wetland vegetation dominance. Achievement of wetland vegetation dominance is defined as a vegetation community where more than 50% of all dominant species are facultative ("FAC") or wetter as determined by the appropriate test per the AGCP Regional Supplement.

9.3 Long-term Success Criteria (Year 15)

By Year 15 the wetland restoration portion of the mitigation area, crown cover should be approximately 80% and the PRMA will be essentially void of introduced trees such that introduced trees are removed from the site and comprise less than 5% of the PRMA on a per acre basis (e.g., Chinese tallow). Furthermore, an active treatment program for invasive species will continue as part of the long-term maintenance program. If the CESWG determines that thinning is necessary to maintain or enhance the ecological value of the PRMA, the Permittee will develop and implement a thinning plan in coordination with approval by the CESWG.

10.0 Monitoring and Reporting Protocols

10.1 Monitoring

The Permittee agrees to perform all work necessary to monitor the site to demonstrate compliance with the success criteria established in Section 9.0. The Permittee will monitor the site in Year 1, Year 3, Year 5, Year 7, Year 10, Year 13, and Year 15 during the growing season through achievement of the long-term success criteria using monitoring protocols described in this Section. The Permittee will collect data on the number and species of planted and naturally occurring species to ensure successful establishment of a hydrophytic plant community and collect data on hydrologic conditions as necessary to document evidence of wetland hydrology in accordance with the performance standards listed in Section 9.0. Documentation will include descriptions of the upper 12 inches of the soil profile sufficient to demonstrate hydric soil properties.

Immediately following initial planting of the PRMA, the Permittee will establish permanent monitoring stations. Each station will have a minimum plot area of 1/10th acre, identified with GPS coordinates. A map depicting the station location and coordinates will be included in the reports. All planted seedlings within each station will be identified by species and GPS coordinate to identify each stem. DLS will document the number, species, height, and ground level diameters of each stem within each station.

Station sampling will occur following vegetative plantings to establish baseline data and then Years 1, 3, and 5. If Year 5 monitoring indicates the site is not meeting success criteria, annual monitoring will continue until the Year 5 criteria is met. After achieving the Year 5 interim success criteria, monitoring will occur at Year 7, Year 10, Year 13, and Year 15 (long-term). If thinning is required after successfully achieving the long-term success criteria, the site will be surveyed prior to and following the first thinning operation following plantings.

The survey of the monitoring stations will provide fixed locations to evaluate the survival rate of planted stems (i.e., stem tally, species diversity, and growth rates of average height, diameter, and biomass). In addition to planted seedlings, Year 3 monitoring will include naturally regenerating

species of trees, shrubs and woody vines, wetland indicator status (scaled from obligate to upland), and the number of introduced species and tally of stems.

10.2 As-built Report

The As-built Report will be submitted to the CESWG within 120 days following completion of all the work required to restore the PRMA. In detail, the As-built Report will describe the completed hydrologic work within the rehabilitation area and an estimated tally of planted stems by species within the rehabilitation area. No deviation from the mitigation work plan described in Section 7.0 may occur without prior approval from the CESWG. If deviation does occur, the As-built Report will include a summary of the CESWG coordination and a description of and reasons for any approved deviation.

10.3 Initial and Interim Success Criteria Reporting

Monitoring reports will be submitted to the CESWG by December 15 of the year performance / success criteria monitoring is required (i.e., as-built report, Year 1, Year 3, Year 5, Year 7, Year 10, Year 13, and Year 15). Each monitoring report will include data sufficient for comparison to the performance standards. The Permittee should also include a discussion of all activities, which took place at the site since the previous monitoring effort. At a minimum, monitoring reports should include the following:

1) digital images taken from ground level at the monitoring station to document the overall conditions;
2) a description of the general condition of the plant community and a discussion of likely causes for deficiency;
3) a description of the generalized degree and distribution of exotic/invasive species;
4) identify measures to eradicate exotic/invasive species and document results of these efforts;
5) a general discussion of hydrologic conditions at the monitoring stations; and
6) a description of wildlife usage at the monitoring stations, including any herbivory problems if applicable.

11.0 Long-term Management Plan

To ensure the long-term sustainability of the resource, the Permittee will perform maintenance and long-term management of the site. These activities will be minimal as the project is anticipated to be a self-sustaining wetland with management activities limited primarily to items such as inspections, controlling invasive species (e.g., spot herbicide treatments), and boundary maintenance.

DLS will be the Long-term Steward charged with management and maintenance responsibilities once long-term success criteria in Section 9.0 are achieved. If DLS requests the option of appointing a different Long-term Steward in accordance with 33 CFR 332.7(d)(1), the appointment of such an entity shall be approved by the CESWG.

Once the long-term criteria are achieved, the estimated long-term, annual cost to maintain the PRMA is $4,712.00 per year (Attachment F). To ensure sufficient long-term funding is available for perpetual maintenance and protection of the PRMA, the Permittee will establish a cash escrow "Long-term Land Management and Maintenance" (LTMM) endowment in the approximate amount of $134,628.57. The National Fish and Wildlife Foundation (NFWF) will manage the LTMM endowment. To structure the LTMM, the mitigation provider will enter a PRM Endowment Agreement with the CESWG and NFWF. Accrued interest of the account shall be used for the administration, operation, maintenance, and/or other purposes that directly benefit the PRMA. The principal shall not be used and shall remain as part of the PRMA's assets to ensure that sufficient funds are available should perpetual maintenance responsibilities be assumed by a third party.

12.0 Adaptive Management Plan

An adaptive management plan, contingencies, and remedial responsibilities will be implemented if monitoring reveals certain performance criteria have not been met. In the event of a deficiency, the Permittee shall provide a notice to the CESWG. The notice will include an explanation for the deficiency and will outline specific practices and measures that will guide decisions for revising the PRMP if needed. If the CESWG determines that the PRMA is not in compliance with the terms and intent of this PRMP, the CESWG will provide written notice to the Permittee that includes a detailed description of the non-compliance determination. The Permittee shall submit a written adaptive management plan to the CESWG for review and approval within forty-five (45) days of receiving written notice of non-compliance. The adaptive management plan shall identify the cause of the non-compliance, the necessary remedial measures, and a timeline for implementing said measures to bring the PRMA into compliance. To the extent practicable, the CESWG shall approve or disapprove the adaptive management plan within forty-five (45) days of receipt, provided sufficient information and acceptable measures are contained in the plan.

13.0 Financial Assurances

The total financial exposure for construction and establishment is $68,203.07. The construction and establishment financial assurances will be provided by a cash escrow or casualty insurance policy. The construction cost estimate with 5% contingency adjustment at Year 0 is $28,202.53 (Attachment F). The PFO establishment cost estimate for Year 1 through Year 15 is $33,887.17 with an annual 2.45% inflationary cost adjustment is $40,000.55. To provide financial assurance protection during construction (Year 0) and establishment (Year 1 through Year 15) and per 33 CFR 332.3(n), the mitigation provider shall establish a cash escrow or purchase a casualty insurance policy to protect the PRMA's mitigation assets in the event of non-compliance or PRMA failure and to ensure that sufficient funds are available to a third party.

If a casualty insurance policy is purchased, a certificate of insurance coverage will be submitted to the CESWG. The casualty policy will provide the operative language that the insurance company will pay necessary funds to a third party to complete the compensatory mitigation obligation. The third party(s) and any solution will be subject to approval by the CESWG. For coverage under the policy, a claim must be made by the CESWG during the policy period.

14.0 References

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United States Army Corps of Engineers [USACE] (2010) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)*. United States Corps of Engineers Research and Development Center, Vicksburg, MS. ERDC/EL TR-10-20.

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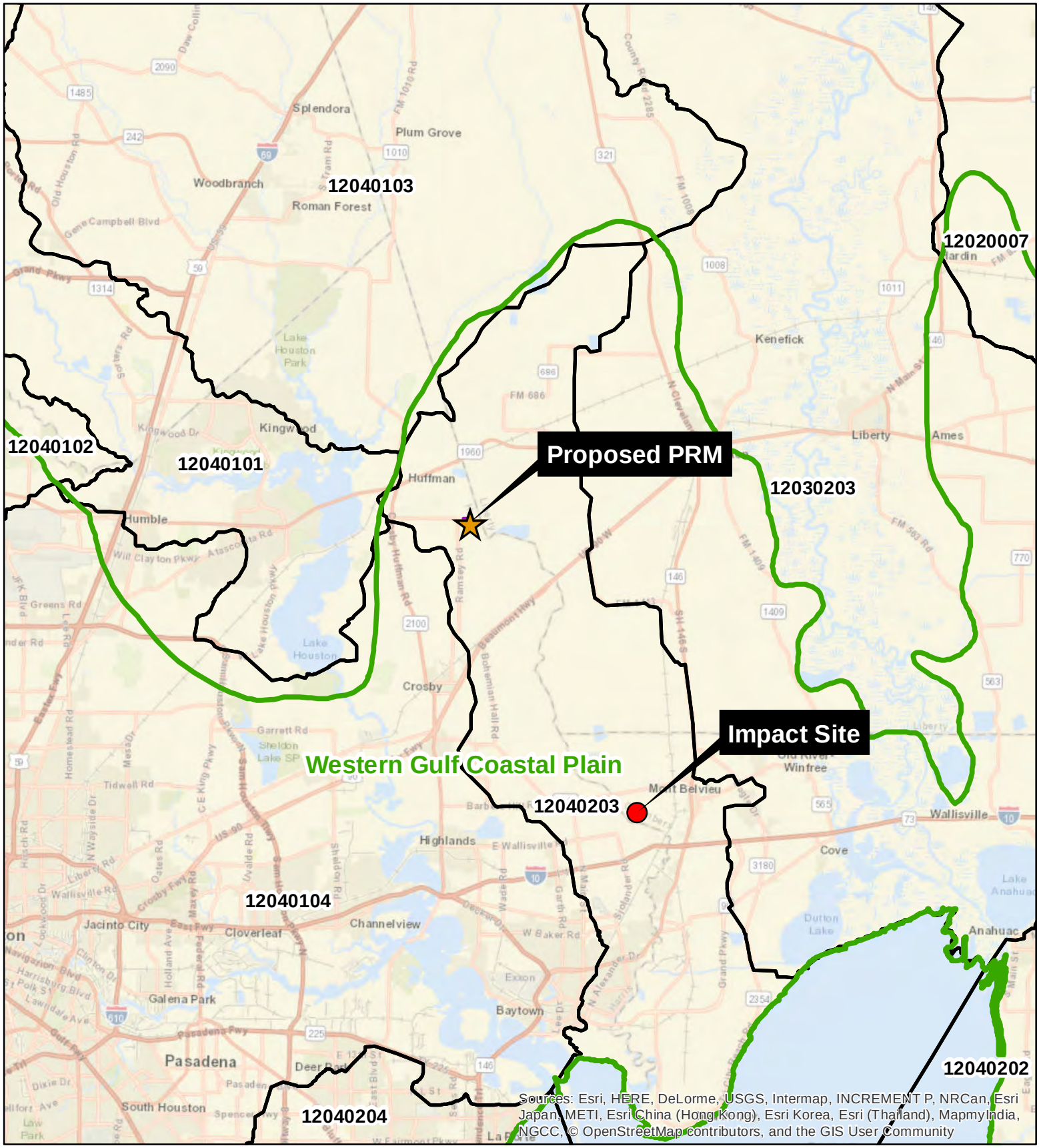
Attachment A. Figures

Recd 2 December 2022



Legend

- EPA Level III Ecoregion
- 8-Digit HUC

0 2.5 5 10

Miles

Fractionator IX Lone Star NGL
Mont Belvieu, LP

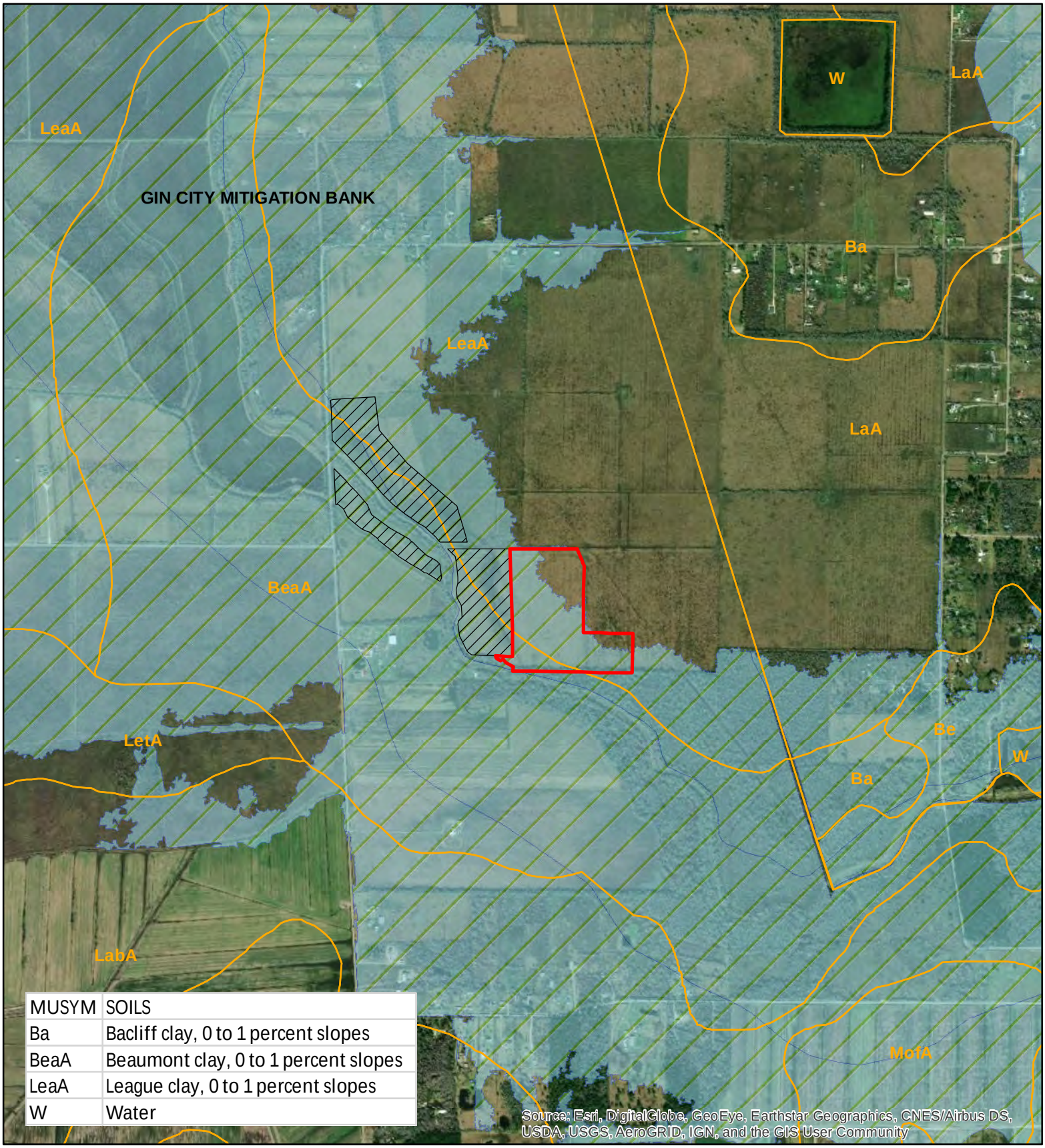
VICINITY, WATERSHED, AND ECOREGION MAP

Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 09/16/2019	
Map No. : F1_Vicinity..mxd	

FIGURE 1

Recd 2 December 2022



MUSYM	SOILS
Ba	Bacliff clay, 0 to 1 percent slopes
BeaA	Beaumont clay, 0 to 1 percent slopes
LeaA	League clay, 0 to 1 percent slopes
W	Water

Legend

- PRM (38.7 ac)
- Approved PRMs
- SURRGO SOILS
- FEMA 100-year Floodplain

0 800 1,600 3,200

Feet

Fractionator IX Lone Star NGL
Mont Belvieu, LP

FLOODPLAIN AND SOILS MAP

Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 09/25/2019	
Map No. : F2_FloodplainSoils..m	

FIGURE 2

Recd 2 December 2022

Legend

- PRM (38.7 ac)
- Re-establishment (30.5 ac)
- Rehabilitation (8.2 ac)

N

0 150 300 600

Feet

Fractionator IX Lone Star NGL
Mont Belvieu, LP

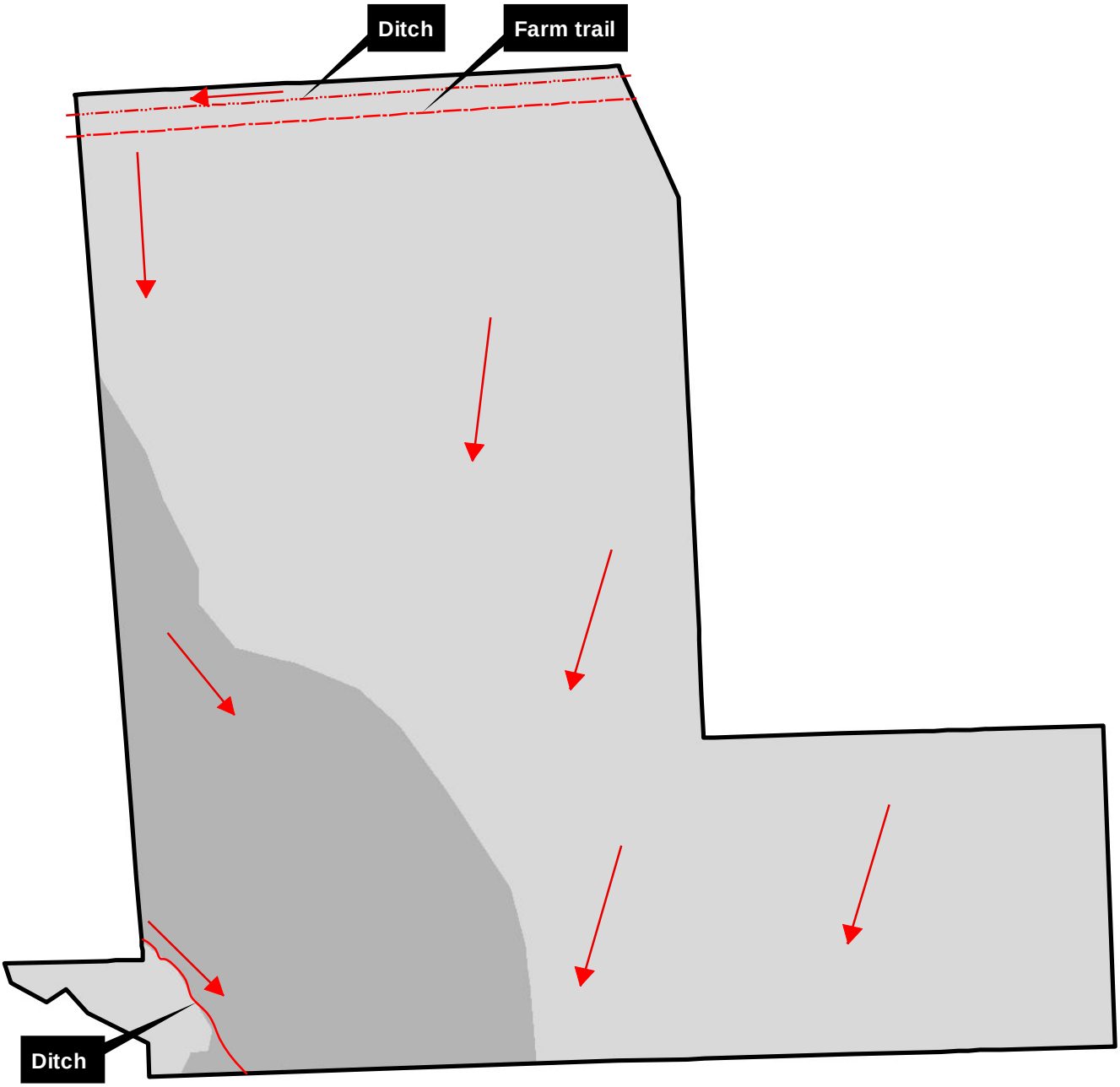
MITIGATION FEATURES MAP

Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date: 9/25/2019	
Map No. : LoneStar02_wking	

FIGURE 3

Recd 2 December 2022



Legend

- PRM (38.7 ac)
- Re-establishment (30.5 ac)
- Rehabilitation (8.2 ac)

0 100 200 400

Feet

Fractionator IX Lone Star NGL
Mont Belvieu, LP

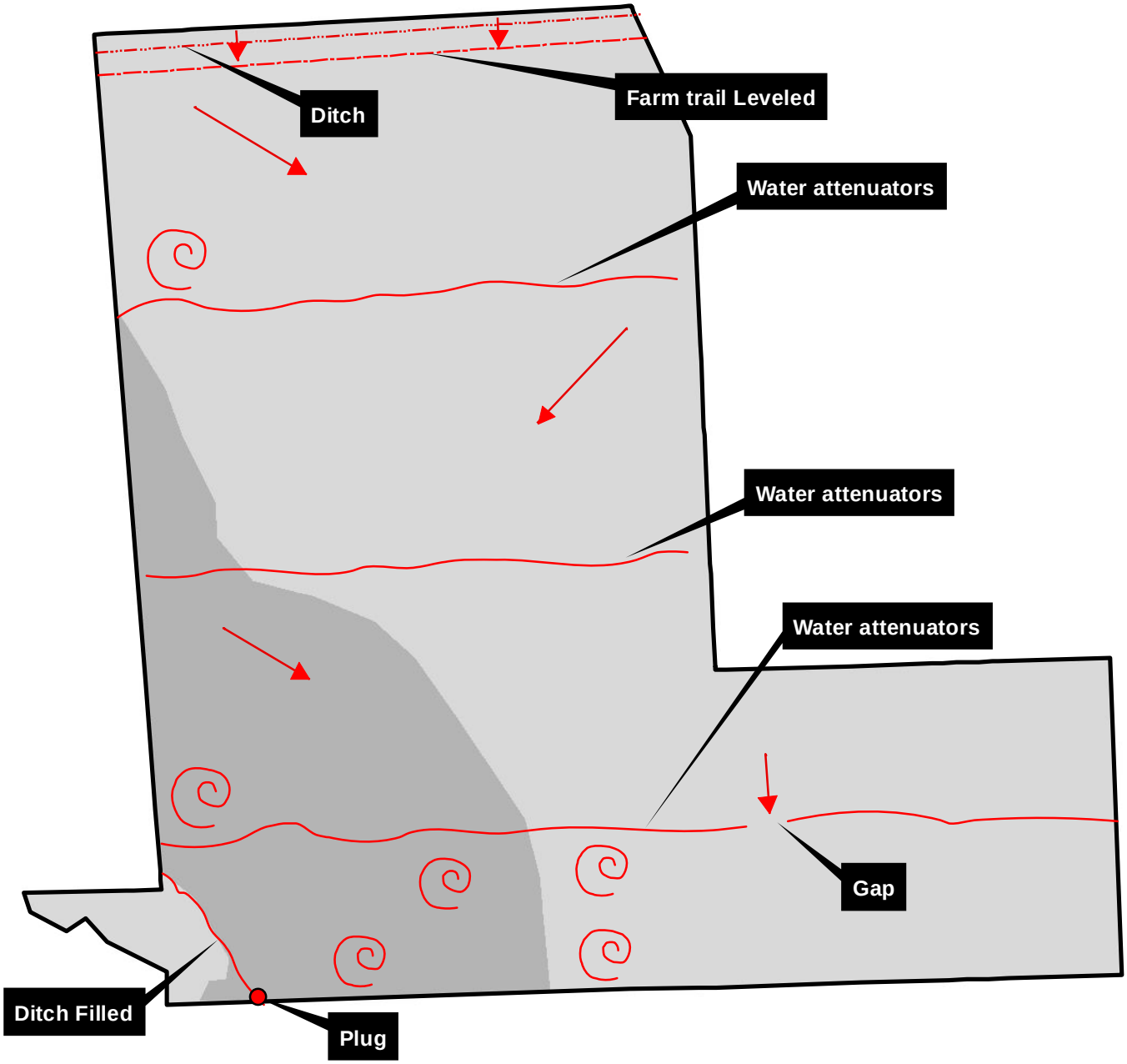
PRE-CONSTRUCTION HYDROLOGY

Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date: 9/25/2019	
Map No. : F04_PreCon	

FIGURE 4

Recd 2 December 2022



Legend

- PRM (38.7 ac)
- Re-establishment (30.5 ac)
- Rehabilitation (8.2 ac)

0 100 200 400

Feet

Fractionator IX Lone Star NGL
Mont Belvieu, LP

POST CONSTRUCTION HYDROLOGY

Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date: 9/25/2019	
Map No. : F05_PostCon	

FIGURE 5

Attachment B. Texas Land Conservancy Commitment Letter

TEXAS LAND CONSERVANCY
Protecting the Nature of Texas.

Chad Butler
Delta Land Services, LLC
Texas Regulatory Manager
6750 West Loop South, Suite 780
Bellaire, TX 77401

September 18, 2019

Re: Letter of Intent for Holding a Conservation Easement

Dear Mr. Butler,

Thank you for the opportunity to collaborate on being a partner on the Mont Belvieu Mitigation Area (Lone Star Frac IX Project) in Harris County, Texas. This proposed project is an excellent opportunity to establish a conservation area that will benefit future generations of Texans. Please accept this non-binding Letter of Intent by the Texas Land Conservancy ("TLC") to work toward placing a conservation easement on this property in conjunction with the creation of the Mont Belvieu Mitigation Area, being approximately 175 acres of land in Harris County, Texas (the "Property") including a 38.7-acre permittee responsible mitigation (PRM) area within the larger tract , subject to the approval of TLC's Board of Directors.

The required due diligence for this project would be as follows:

1. **Baseline Documentation Report:** Grantor to obtain a qualified baseline documentation report at its cost.
2. **Survey:** Grantor to obtain a current survey at its cost, which will be used to determine the total acreage and legal description of the Property.
3. **Title Policy:** Grantor to pay for the Title Policy premium.
4. **Title Review & Property Inspection:** Adequate time shall be permitted for title review and inspection of the property.
5. **Approval:** The completion of the conservation easement is subject to approval of TLC's Board of Directors.

This is a Letter of Intent and is not a binding agreement. This Letter of Intent represents the good faith intention of TLC to work towards the execution of a perpetual conservation easement in conjunction with the creation of the Mont Belvieu Mitigation Area.

Thank you for your consideration, and please do not hesitate to contact me if you have any questions.

Sincerely,

Mark Steinbach
Executive Director

P.O. Box 162481
Austin, Texas 78716
texaslandconservancy.org

ACCREDITED LAND TRUST ACCREDITATION COMMISSION

Attachment C. Table 1. Summary of Predicted Functional Capacity Unit (FCU) Lift by Year for the PRMA

Rehabilitation Riverine Forested Hydrogeomorphic Interim Model Workbook (Tables 2 – 4)

Re-establishment Riverine Forested Hydrogeomorphic Interim Model Workbook (Tables 5 – 7)

Table 1. Summary of Predicted Functional Capacity Unit (FCU) Lift by Year for the PRMA

PFO Restoration	Year 0 Baseline	Year 4 Lift	Year 10 Lift	Net FCU Lift by Function
PFO Rehabilitation (8.20 Acres)				
Physical FCU	2.593	2.428	1.060	3.488
Biological FCU	1.640	3.758	0.991	4.749
Chemical FCU	3.007	2.241	0.929	3.171
PFO Re-establishment (30.50 Acres)				
Physical FCU	0.000	14.197	4.272	18.469
Biological FCU	0.000	17.156	6.608	23.765
Chemical FCU	0.000	14.640	5.287	19.927
Totals				
Physical FCU			**21.957**	
Biological FCU			**28.514**	
Chemical FCU			**23.097**	

Table 2. iHGM Forested Wetland Rehabilitation Baseline (Year 0) FCI Score for Lone Star Frac IX

PFO PRM Rehabilitation Baseline Year 0	**PFO**
Acreage	**8.20**
Variable	**Baseline**
Vdur: Duration of flooding	0.50
Vfreq: Frequency of flooding	0.50
Vtopo: Topography	0.40
Vcwd: Course woody debris	0.10
Vwood: Woody vegetation	0.10
Vtree: Tree species	0.10
Vrich: Tree richness/diversity	0.10
Vbasal: Tree basal area	0.10
Vdesity: Tree density	0.10
Vmid: Midstory (Shrub/sapling/woody vines)	0.10
Vherb: Herbaceous layer	0.50
Vdetritus: Detritus	0.50
Vredox: Redoximorphic process	0.10
Vsorpt: Sorptive Soil Properties	1.00
Vconnect: Connectivity to other habitat types	0.50

Physical FCI: Temporary Storage & Detention of Storage Water	**0.316**
Biological FCI: Maintain Plant and Animal Community	**0.200**
Chemical FCI: Removal & Sequestration of Elements & Compounds	**0.367**

Physical FCU: Temporary Storage & Detention of Storage Water	**2.593**
Biological FCU: Maintain Plant and Animal Community	**1.640**
Chemical FCU: Removal & Sequestration of Elements & Compounds	**3.007**

Baseline Physical FCU	**2.593**
Baseline Biological FCU	**1.640**
Baseline Chemical FCU	**3.007**

Table 3. iHGM Forested Wetland Rehabilitation Projected 4-Year FCI Score for Lone Star Frac IX

PFO PRM Rehabilitation Interim Year 4	**PFO**
Acreage	**8.20**
Variable	**Year 4**
Vdur: Duration of flooding	0.75
Vfreq: Frequency of flooding	0.75
Vtopo: Topography	0.70
Vcwd: Course woody debris	0.30
Vwood: Woody vegetation	0.50
Vtree: Tree species	1.00
Vrich: Tree richness/diversity	1.00
Vbasal: Tree basal area	0.40
Vdesity: Tree density	0.40
Vmid: Midstory (Shrub/sapling/woody vines)	0.50
Vherb: Herbaceous layer	0.50
Vdetritus: Detritus	1.00
Vredox: Redoximorphic process	0.10
Vsorpt: Sorptive Soil Properties	1.00
Vconnect: Connectivity to other habitat types	0.75

Physical FCI: Temporary Storage & Detention of Storage Water	**0.612**
Biological FCI: Maintain Plant and Animal Community	**0.658**
Chemical FCI: Removal & Sequestration of Elements & Compounds	**0.640**

Physical FCU: Temporary Storage & Detention of Storage Water	**5.021**
Biological FCU: Maintain Plant and Animal Community	**5.398**
Chemical FCU: Removal & Sequestration of Elements & Compounds	**5.248**

Physical FCU lift from baseline to year 4 (year 4 minus baseline)	**2.428**
Biological FCU lift from baseline to year 4 (year 4 minus baseline)	**3.758**
Chemical FCU lift from baseline to year 4 (year 4 minus baseline)	**2.241**

Table 4. iHGM Forested Wetland Rehabilitation Projected 10-Year FCI Score for Lone Star Frac IX

PFO PRM Rehabilitation Long-term Year 10	**PFO**
Acreage	**8.20**
Variable	**Year 10**
Vdur: Duration of flooding	0.75
Vfreq: Frequency of flooding	0.75
Vtopo: Topography	0.70
Vcwd: Course woody debris	0.50
Vwood: Woody vegetation	1.00
Vtree: Tree species	1.00
Vrich: Tree richness/diversity	1.00
Vbasal: Tree basal area	0.60
Vdesity: Tree density	1.00
Vmid: Midstory (Shrub/sapling/woody vines)	0.75
Vherb: Herbaceous layer	0.50
Vdetritus: Detritus	0.50
Vredox: Redoximorphic process	0.10
Vsorpt: Sorptive Soil Properties	1.00
Vconnect: Connectivity to other habitat types	0.75

Physical FCI: Temporary Storage & Detention of Storage Water	**0.742**
Biological FCI: Maintain Plant and Animal Community	**0.779**
Chemical FCI: Removal & Sequestration of Elements & Compounds	**0.753**

Physical FCU: Temporary Storage & Detention of Storage Water	**6.081**
Biological FCU: Maintain Plant and Animal Community	**6.389**
Chemical FCU: Removal & Sequestration of Elements & Compounds	**6.177**

Physical FCU lift from year 4 to year 10 (year 10 minus year 4)	**1.060**
Biological FCU lift from year 4 to year 10 (year 10 minus year 4)	**0.991**
Chemical FCU lift from year 4 to year 10 (year 10 minus year 4)	**0.929**

Table 5. iHGM Forested Wetland Re-establishment Baseline (Year 0) FCI Score for Lone Star Frac IX

PFO PRM Re-establishment Baseline Year 0	**PFO**
Acreage	**30.50**
Variable	**Baseline**
Vdur: Duration of flooding	0.00
Vfreq: Frequency of flooding	0.00
Vtopo: Topography	0.00
Vcwd: Course woody debris	0.00
Vwood: Woody vegetation	0.00
Vtree: Tree species	0.00
Vrich: Tree richness/diversity	0.00
Vbasal: Tree basal area	0.00
Vdesity: Tree density	0.00
Vmid: Midstory (Shrub/sapling/woody vines)	0.00
Vherb: Herbaceous layer	0.00
Vdetritus: Detritus	0.00
Vredox: Redoximorphic process	0.00
Vsorpt: Sorptive Soil Properties	0.00
Vconnect: Connectivity to other habitat types	0.00

Physical FCI: Temporary Storage & Detention of Storage Water	**0.000**
Biological FCI: Maintain Plant and Animal Community	**0.000**
Chemical FCI: Removal & Sequestration of Elements & Compounds	**0.000**

Physical FCU: Temporary Storage & Detention of Storage Water	**0.000**
Biological FCU: Maintain Plant and Animal Community	**0.000**
Chemical FCU: Removal & Sequestration of Elements & Compounds	**0.000**

Baseline Physical FCU	**0.000**
Baseline Biological FCU	**0.000**
Baseline Chemical FCU	**0.000**

Table 6. iHGM Forested Wetland Re-establishment Projected 4-Year FCI Score for Lone Star Frac IX

PFO PRM Re-establishment Interim Year 4	**PFO**
Acreage	**30.50**
Variable	**Year 4**
Vdur: Duration of flooding	0.50
Vfreq: Frequency of flooding	0.50
Vtopo: Topography	0.70
Vcwd: Course woody debris	0.10
Vwood: Woody vegetation	0.50
Vtree: Tree species	0.80
Vrich: Tree richness/diversity	0.80
Vbasal: Tree basal area	0.40
Vdesity: Tree density	0.40
Vmid: Midstory (Shrub/sapling/woody vines)	0.25
Vherb: Herbaceous layer	0.30
Vdetritus: Detritus	0.30
Vredox: Redoximorphic process	0.10
Vsorpt: Sorptive Soil Properties	1.00
Vconnect: Connectivity to other habitat types	1.00

Physical FCI: Temporary Storage & Detention of Storage Water	**0.465**
Biological FCI: Maintain Plant and Animal Community	**0.563**
Chemical FCI: Removal & Sequestration of Elements & Compounds	**0.480**

Physical FCU: Temporary Storage & Detention of Storage Water	**14.197**
Biological FCU: Maintain Plant and Animal Community	**17.156**
Chemical FCU: Removal & Sequestration of Elements & Compounds	**14.640**

Physical FCU lift from baseline to year 4 (year 4 minus baseline)	**14.197**
Biological FCU lift from baseline to year 4 (year 4 minus baseline)	**17.156**
Chemical FCU lift from baseline to year 4 (year 4 minus baseline)	**14.640**

Table 7. iHGM Forested Wetland Re-establishment Projected 10-Year FCI Score for Lone Star Frac IX

PFO PRM Re-establishment Long-term Year 10	**PFO**
Acreage	**30.50**
Variable	**Year 10**
Vdur: Duration of flooding	0.50
Vfreq: Frequency of flooding	0.50
Vtopo: Topography	0.70
Vcwd: Course woody debris	0.50
Vwood: Woody vegetation	1.00
Vtree: Tree species	1.00
Vrich: Tree richness/diversity	1.00
Vbasal: Tree basal area	0.60
Vdesity: Tree density	1.00
Vmid: Midstory (Shrub/sapling/woody vines)	0.75
Vherb: Herbaceous layer	0.50
Vdetritus: Detritus	0.50
Vredox: Redoximorphic process	0.10
Vsorpt: Sorptive Soil Properties	1.00
Vconnect: Connectivity to other habitat types	0.75

Physical FCI: Temporary Storage & Detention of Storage Water	**0.606**
Biological FCI: Maintain Plant and Animal Community	**0.779**
Chemical FCI: Removal & Sequestration of Elements & Compounds	**0.653**

Physical FCU: Temporary Storage & Detention of Storage Water	**18.469**
Biological FCU: Maintain Plant and Animal Community	**23.765**
Chemical FCU: Removal & Sequestration of Elements & Compounds	**19.927**

Physical FCU lift from year 4 to year 10 (year 10 minus year 4)	**4.272**
Biological FCU lift from year 4 to year 10 (year 10 minus year 4)	**6.608**
Chemical FCU lift from year 4 to year 10 (year 10 minus year 4)	**5.287**

Attachment D. Wetland Delineation

WETLAND DELINEATION REPORT
MONT BELVIEU TRACT
HARRIS COUNTY, TX

DELTA LAND SERVICES

JANUARY 4, 2018

PREPARED BY:

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

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WETLAND DELINEATION REPORT
MONT BELVIEU
HARRIS COUNTY, TEXAS

1.0 INTRODUCTION

The following report summarizes a wetland delineation on a 169.6-acre project area of interest (AOI). The AOI is located east of and adjacent to Ramsey Road in Harris County, approximately 6.5 statute miles north of the town of Crosby, Texas (Figures 1 and 2). The approximate site center is located at Latitude 30.003920° North and Longitude 95.046568° West. The AOI is within the North Galveston Bay Subbasin (USGS Hydrologic Unit Code [HUC] 12040203). The purpose of this report is to identify areas within the AOI that may potentially be jurisdictional "waters of the United States" as defined in 33 CFR 328.3(a).

Jurisdictional wetlands are regulated by the United States Army Corps of Engineers (USACE). Those wetlands are defined as "areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE 1987). Jurisdictional wetlands as defined by the USACE (1987) are referred to as "wetlands" throughout this report.

Three mandatory technical criteria for determining the presence of a wetland are, with exceptions, (1) hydric soils, (2) hydrophytic vegetation, and (3) wetland hydrology. A hydric soil is defined as one that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (Natural Resources Conservation Service [NRCS] 2010). Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. When hydrophytic vegetation comprises a community where indicators of hydric soils and wetland hydrology also occur, the area has wetland vegetation. The term "wetland hydrology" encompasses the sum total of wetness characteristics in areas that are inundated or have saturated soils (USACE 1987).

Deepwater aquatic habitats are "areas that are permanently inundated at mean annual water depths greater than 6.6 feet or permanently inundated areas, less than or equal to 6.6 feet in depth that do not support rooted-emergent or woody plant species" (USACE 1987). These areas are referred to as "other waters of the United States" in this report. Navigable waters are "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 CFR 329.4). Any area below the ordinary high water mark [33 CFR 328.3(e)] may fall under federal jurisdiction as a navigable water.

2.0 PHYSIOGRAPHY, CLIMATE, AND SITE DESCRIPTION

The AOI is located in the Western Gulf Coastal Plain Level 3 Ecoregion (Omernik 1995), the Atlantic and Gulf Coast Lowland Forest and Crop Region (LRR T) and the Gulf Coastal Prairies Major Land Resource Area (MLRA 150A; NRCS 2006). Natural topography within the AOI is flat to gently undulating with typical slopes ranging from 0 to 2%. However, artificial features such as spoil banks and drainage ditches are present within the AOI and exhibit slopes in excess of 60%. Typical drainage patterns for the area have been altered to accommodate agricultural operations on the site and surrounding lands. However, despite efforts to reduce the duration of flooding, most areas remain poorly drained and exhibit soils with low permeability, resulting in prolonged periods of soil saturation and inundation. The site is situated adjacent to Cedar Bayou and is almost entirely included in FEMA designated flood zone AE or 100-year floodplain (Figure 3). Natural elevation ranges from less than 196 feet to approximately 208 feet North American Vertical Datum (NAVD) [Figure 4].

Harris County has a warm and relatively humid, subtropical climate characterized by relatively high rainfall. The average annual precipitation based on years 1981 through 2010 is 49.77 inches. The growing season is year round, as soil temperatures never drop below freezing and Harris County's average annual temperature is 69.8 degrees (NOAA, National Weather Service 2010).

The surrounding land use is primarily agricultural consisting mostly of grazing pastures but containing some commodity crop fields and a wetland mitigation bank. The AOI is open land used for cattle and hay production with a small sparsely vegetated forested riparian corridor along Cedar Bayou. DLS conducted an analysis of aerial photography and determined that portions of the AOI have been used for some type of agricultural production (e.g. cultivation, cattle grazing) since 1944 being completely cleared by 1978; prior to agricultural use, the land was likely forested. The US Fish and Wildlife Service (USFWS 2011) identifies portions of the property as Palustrine Emergent Farmed (PEMf) wetlands per the Cowardin classification system (Cowardin et al. 1979) [Figure 5].

3.0 METHODS

The wetland delineation followed *on-site routine* field procedures as outlined by the USACE (1987) and subsequent Regulatory Guidance Letters (RGL). Delta Land Services, LLC (DLS) biologists conducted a field investigation on December 11th, 2017 that consisted of a total site survey for identification and data collection regarding potential jurisdictional wetlands and waters. Due to the relative small size and lack of complexity of the AOI, no transects were required for establishing sample sites.

Thirteen (13) data points were evaluated within the AOI. These data points were established with the intent of capturing changes in plant community, hydrologic condition, and/or soil type following sampling procedures outlined in the USACE Delineation Manual. Observations of soils, vegetation, and hydrology were made at each data point and recorded on routine wetland determination data sheets per the Atlantic and Gulf Coastal Plain (AGCP) Regional Supplement (USACE 2010). The delineation map shows the location of each of the 13 data points. Soil samples were obtained by excavating an approximate 16-inch soil pit using a sharp-shooter shovel. Soil color was determined by matching soil samples to color chips contained in a Munsell soil color chart. These samples were examined in the field for the presence of hydric soil indicators which are described in the *NTCHS Field Indicators of Hydric Soils in the United States Version 8.0* (NRCS 2016) and in the AGCP Regional Supplement (USACE 2010).

Vegetative species present in each data plot were recorded for each of the following vertical strata: tree canopy or individual trees, saplings and shrubs, and herbaceous layer. Percent cover for each dominant species was determined by ocular estimation. Dominant species were determined using the 50/20 rule found in the 1987 Delineation Manual (USACE 1987). Plant communities met hydrophytic vegetation criteria if the dominant species from all strata were classified as obligatory (OBL), facultative-wet (FACW) or facultative (FAC) species within the AGCP Region (Lichvar et al. 2014). In areas where hydric soils and hydrology were present but hydrophytic communities were not dominant, the prevalence index was used to determine if the wetland vegetation criteria were met (USACE 2010). Due to ongoing maintenance of the property as crop fields and the manipulation of the vegetative community through mechanical and chemical removal and disking of the soil surface, consideration was given to the management stage of each individual field during the survey in order to develop an accurate representation of typical communities on the data sheets.

Hydrology criteria were assessed based on observation of primary and/or secondary field indicators as described in USACE (2010). The hydrology criteria were met if one primary field indicator was observed or at least two secondary indicators were observed.

Data points and wetland areas/other waters were mapped and surveyed utilizing a mapping grade differential global positioning system (DGPS) with real time correction. Acreage was calculated by using a geographic information system (GIS) to process the DGPS data. Digital photographs were taken of the plant community and soil profiles at each data point.

4.0 RESULTS

4.1 Soils

The association of soils found here consists primarily of clayey soils typical to that of coastal plains and alluvial riparian corridors. The AOI is mapped

as Beaumont clay, 0-1% slopes (BeaA) and League clay, 0-1% slopes (LeaA). These soils have hydric ratings of 85 and 10 respectively (Figure 6). Of the 13 soil profiles examined, all of them contained hydric soil indicators regardless of the map unit in which they were located. The only hydric soil indicator observed onsite was Depleted Matrix (F3).

Soil map units identified within the AOI are based on SSURGO data (NRCS[b]).

4.2 Vegetation

The AOI consists of grazing pastures and hay fields. Dominant species across all sampling areas include but are not limited to marsh flatsedge (*Cyperus pseudovegetus*), Vasey's grass (*Paspalum urvillei*), bahaiagrass (*Paspalum notatum*), southern dewberry (*rubus trivialis*), smut grass *(Sporobolus indicus)*, Johnsongrass (*Sorghum halepense*), common carpetgrass (*Axonopus fissifolius*), and needle spikerush (*Eleocharis acicularis*).

Vegetative conditions are a product of ongoing maintenance and operation of the property for livestock production. Only 3 of the sample locations met the requirement for hydrophytic vegetation, and these conditions will likely persist for the foreseeable future.

4.3 Hydrology

Natural hydrology sources on the property are precipitation and flood events in Cedar Bayou and/or its tributaries. Surface hydrology in the pastures has been altered by the deepening of natural drainage patterns to function more like ditches. Also, culverts have been installed to drain the pasture areas through or under the spoil banks along Cedar Bayou. These drainage features were installed to accommodate specific management goals of the land owner and to ensure agricultural productivity. These drainage features have been maintained as such to date.

Within the AOI, natural topography creates sheet flow drainage patterns from north to south and toward Cedar Bayou. A surface or subsurface accumulation of clay throughout most of the property 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 micro topography.

Since the property's conversion to grazing pastures, the system has been altered in an effort to improve the removal of surface water from the AOI. However, some of the property does remain saturated for periods sufficient to support wetland hydrology and vegetation. Of the 13 data points sampled at natural grade, 11 points had wetland hydrology indicators. The most

common primary indicators were Saturation (A3) and Oxidized Rhizospheres on Living Roots (C3), while common secondary indicators were Crawfish Burrows (C8), Geomorphic Position (D2), and the FAC-Neutral Test (D5).

5.0 CONCLUSION

Based on the field investigation and analysis of aerial imagery, soil data, and light detection and ranging (LIDAR) data, DLS biologists observed approximately 34.7 acres of potentially jurisdictional waters. These areas exist as a combination of open water and emergent wetland habitat. More specifically the open water includes a reach of Cedar Bayou and an unnamed tributary, both of which are regulated by Section 404 of the Clean Water Act. Non-jurisdictional features within the AOI consisted of non-wet grazing pastures and hay fields as well as spoil banks associated with dredging activity in Cedar Bayou and the tributary (Figure 7).

The USACE under the authority of the Clean Water Act, Section 404 and the Rivers and Harbor Act, Section 10 has the responsibility to make the final determination of the location and extent of jurisdictional wetlands and navigable waters on this property, respectively. This report represents the opinion of the investigators and should be considered preliminary until final concurrence is obtained from the U. S. Army Corps of Engineers Galveston District.

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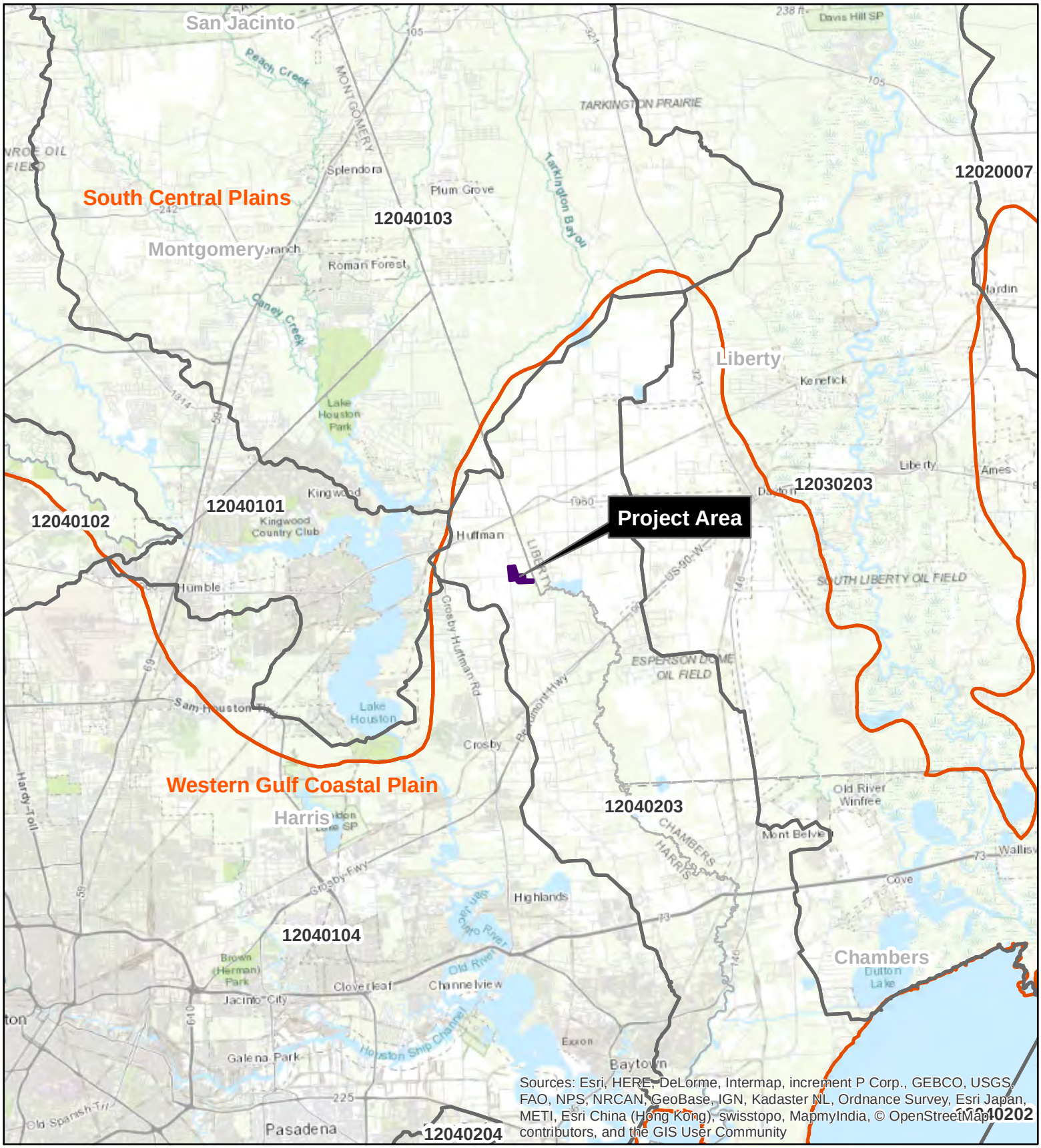
Recd 2 December 2022

FIGURES

Recd 2 December 2022



Legend

- Project Area (169.6 ac.)
- USGS 8 DIGIT HUC
- Level III Ecoregion

5 2.5 0 5
Miles

Mont Belvieu Property

VICINITY MAP

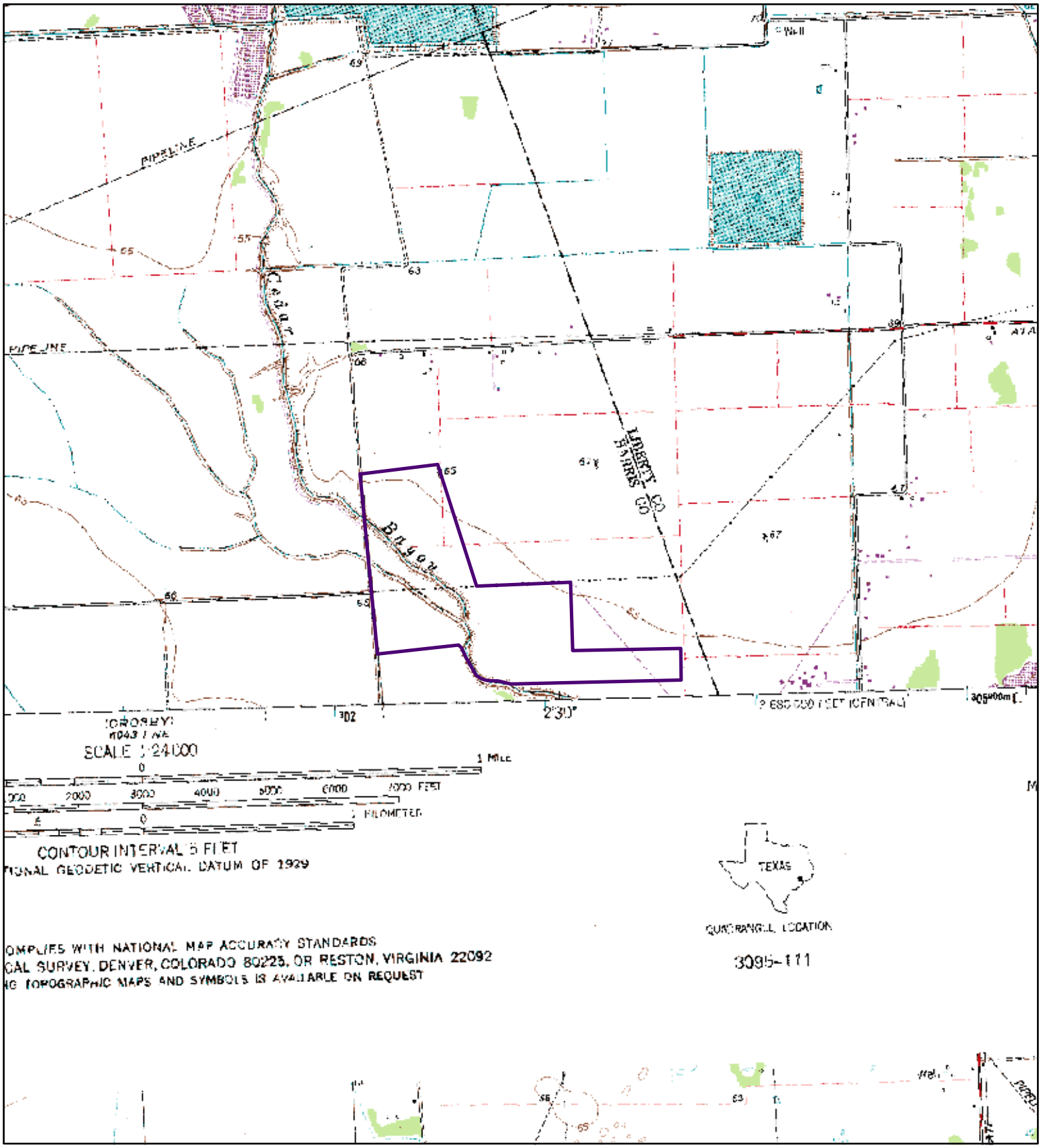
Harris County, TX

Created :	TSC/ArcView10.4
Approved :	JMJ
Date :	12/5/2017
Map # :	F01_Vicinity.mxd

DELTA LAND SERVICES

FIGURE 1

Recd 2 December 2022



Legend

Project Area (169.6 ac.)

2,000 1,000 0 2,000

Feet

Mont Belvieu Property

USGS 7.5-MINUTE QUADRANGLE

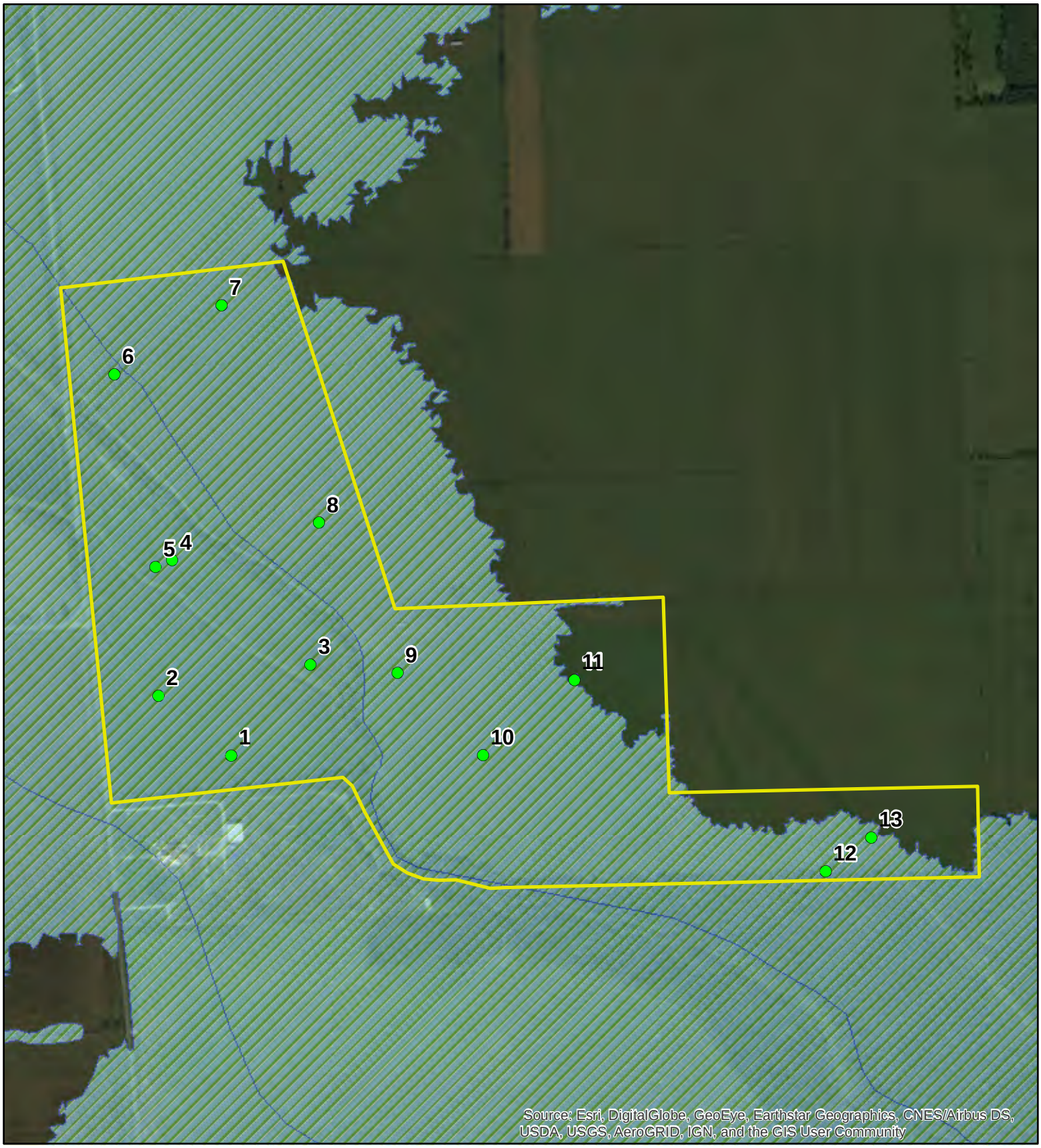
Harris County, TX

Created :	TSC/ArcView10.4
Approved :	JMJ
Date :	12/5/2017
Map # :	F02_QUAD.mxd

DELTA LAND SERVICES

FIGURE 2

Recd 2 December 2022



Legend

- Project Area (169.6 ac.)
- FEMA Flood Zone AE
- Data Points

700 350 0 700
Feet

Mont Belvieu Property

FEMA FLOODZONE MAP

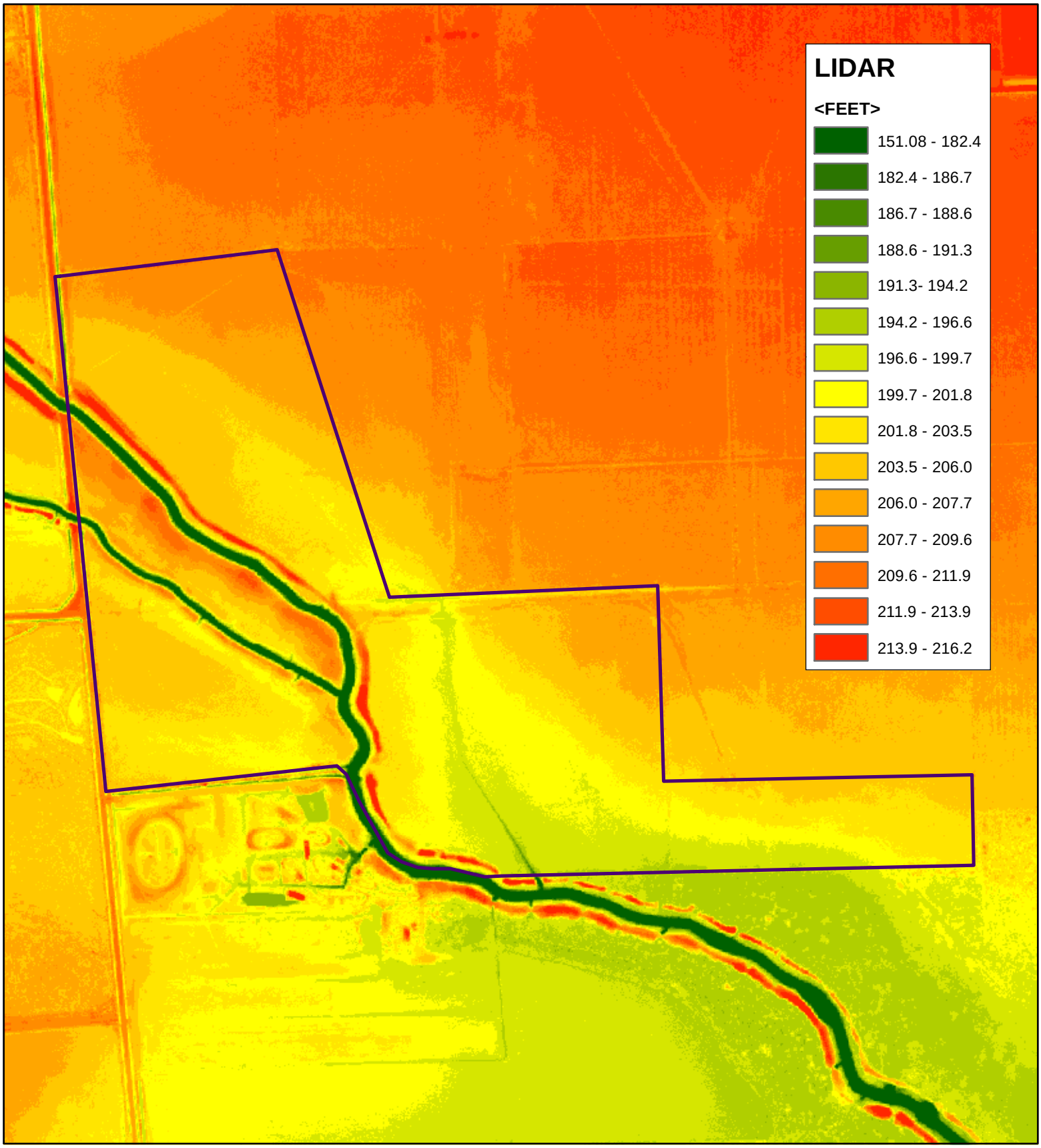
Harris County, TX

Created :	TSC/ArcView10.4
Approved :	JMJ
Date :	12/5/2017
Map # :	F03_FloodMap.mxd

DELTA LAND SERVICES

FIGURE 3

Recd 2 December 2022



Legend

Project Area (169.6 ac.)

700 350 0 700

Feet

Mont Belvieu Property

LIDAR MAP

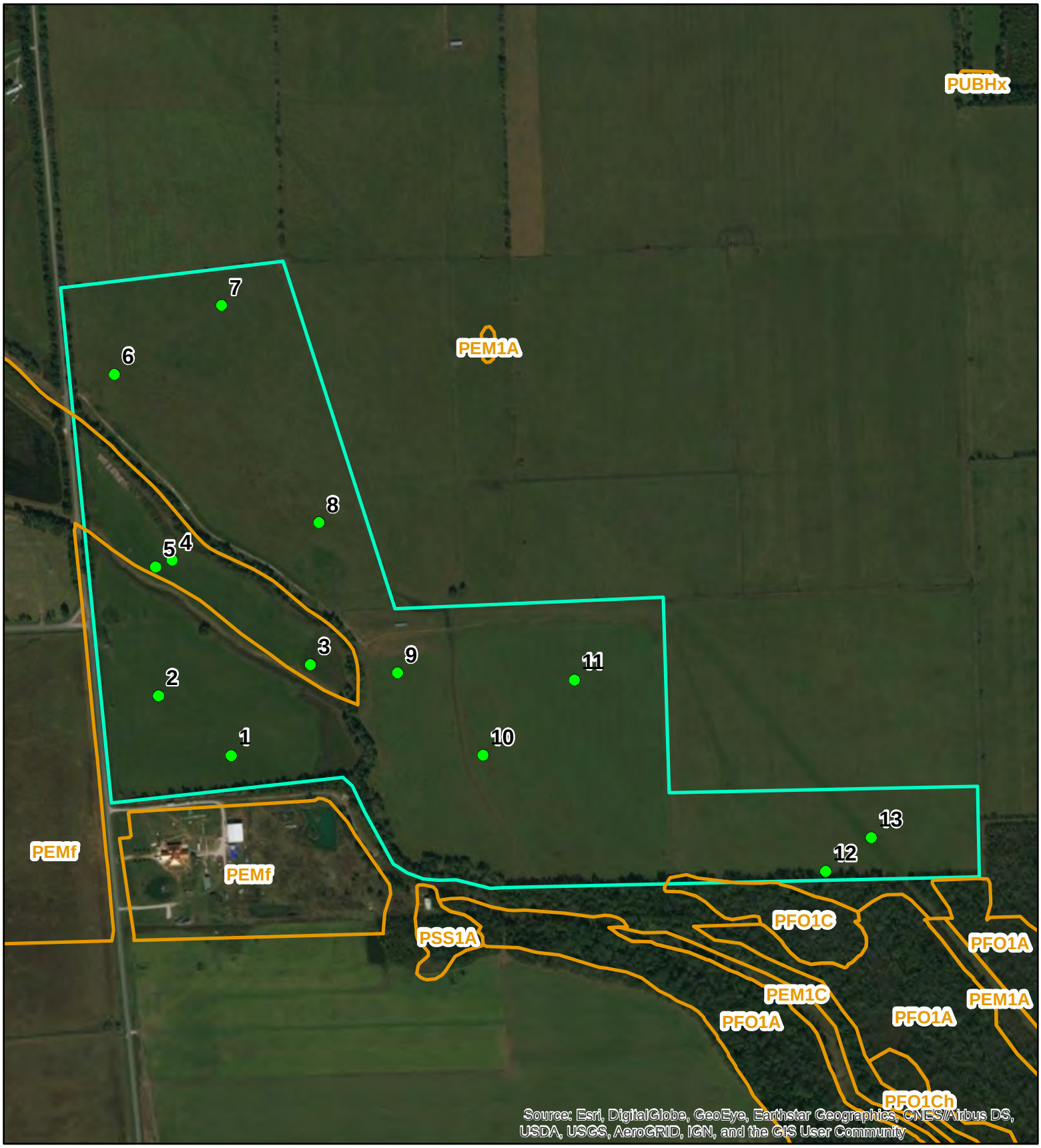
Harris County, TX

Created :	TSC/ArcView10.4
Approved :	JMJ
Date :	12/5/2017
Map # :	F04_Lidar.mxd

DELTA LAND SERVICES

FIGURE 4

Recd 2 December 2022



Legend

- Project Area (169.6 ac.)
- USFWS National Wetland Inventory
- Data Points

700 350 0 700
Feet

Mont Belvieu Property

NATIONAL WETLAND INVENTORY MAP

Harris County, TX

Created :	TSC/ArcView10.4
Approved :	JMJ
Date :	12/5/2017
Map # :	F05_NWI.mxd

DELTA LAND SERVICES

FIGURE 5

Recd 2 December 2022

Legend

- Project Area (169.6 ac.)
- BeaA: Beaumont clay
- LeaA: League clay, 0 to 1 percent slopes
- Data Points

700 350 0 700
Feet

Mont Belvieu Property

SSURGO SOILS MAP

Harris County, TX

Created :	TSC/ArcView10.4
Approved :	JMJ
Date :	12/5/2017
Map # :	F06_SoilsMap.mxd

DELTA LAND SERVICES

FIGURE 6

Recd 2 December 2022

Legend

- Project Area (169.6 ac.)
- Delineation Data Point
- Wetlands (28.0 ac.)
- Waters (6.7 ac.)
- Transcects

700 350 0 700
Feet

Mont Belvieu Property

DELINEATION MAP

Harris County, TX

Created :	TSC/ArcView10.4
Approved :	JMJ
Date :	12/19/2017
Map # :	F07_WLD.mxd

DELTA LAND SERVICES

FIGURE 7

APPENDIX 1.1

WETLAND DELINEATION DATA SHEETS WITH PHOTOGRAPHS

DATA FORM 3

ATYPICAL SITUATIONS

Applicant Name: Delta Land Services Application Number: _____ Project Name: Mont Belvieu

Location: Crosby, TX Plot Number: 1-13 Date: 12-11-2017

A. VEGETATION:

1. Type of Alteration: Clipping / Mowing

2. Effect on Vegetation: Persistence of herbaceous community suitable for cattle grazing and hay

3. Previous Vegetation: likely forested based on landscape position + historic aerial review
(Attach documentation)

4. Hydrophytic Vegetation? Yes 6, 8, 10 No 1-5, 7, 9, 11-13.

B. SOILS:

1. Type of Alteration: Spoil Deposition from adjacent drainage (Data Point 4 only)

2. Effect on Soils: Altered, inconsistent profiles in vicinity of sample site

3. Previous Soils: BeaA: Beaumont Clay 0-1% slopes
(Attach documentation)

4. Hydric Soils? Yes DP 4 No _____.

C. HYDROLOGY:

1. Type of Alteration: _____

2. Effect on Hydrology: _____

3. Previous Hydrology: _____
(Attach documentation)

4. Wetland Hydrology? Yes _____ No _____.

Characterized By: _____

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 1

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.002972 **Long.:** -95.04864 **Datum:** NAD83

Soil Map Unit Name: BeaA: Beaumont Clay **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) **(If no, explain in Remarks.)**

Are Vegetation [✓] **, Soil** [ ] **, or Hydrology** [ ] **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ( ) No (●)

Are Vegetation [ ] **, Soil** [ ] **, or Hydrology** [ ] **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Hydric Soil Present?	Yes (●)	No ( )	
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:
Mowed Hay Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry Season Water Table (C2)
- [✓] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [✓] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches):
Water Table Present?	Yes ( )	No (●)	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes (●)	No ( )	Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 1

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. **Paspalum notatum**	100	☑	100.0%	FACU
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 50	20% of Total Cover: 20	100	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	100	x 4 =	400	
UPL species	0	x 5 =	0	
Column Totals:	100	**(A)**	400	**(B)**

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos:04-05. Hay pasture managed for Bahiagrass production.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-12	10YR	4/1	80%	7.5YR	5/8	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soil Profile photo 06

Recd 2 December 2022

Mont Belvieu Tract DP 1

Vegetation

Soil

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 2

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.003897 **Long.:** -95.049868 **Datum:** NAD83

Soil Map Unit Name: BeaA: Beaumont clay **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Mowed Hay Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 6

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located in FEMA Floodzone AE

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VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 2

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Paspalum notatum	70	☑	77.8%	FACU
2. Solidago sempervirens	15	☐	16.7%	FACW
3. Paspalum urvillei	5	☐	5.6%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 45	20% of Total Cover: 18	90	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	5	x 3 =	15	
FACU species	70	x 4 =	280	
UPL species	0	x 5 =	0	
Column Totals:	90	**(A)**	325	**(B)**

Prevalence Index = B/A = 3.611

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 07-08

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type [1]	Redox Features Loc [2]	Texture	Remarks
0-12+	10YR 4/1	70%	10YR 5/6	20%	C	M	Clay	
			7.5YR 4/6	10%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Photos: 09

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Mont Belvieu Tract DP 2

Vegetation

Soil

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 3

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** convex **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.004303 **Long.:** -95.047233 **Datum:** NAD83

Soil Map Unit Name: BeaA: Beaumont clay **NWI classification:** PEMf

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉	No ○	
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks:
Mowed Hay Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

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VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 3

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Rubus trivialis	70	☑	53.8%	FACU
2. Sorghum halepense	30	☑	23.1%	FACU
3. Campsis radicans	15	☐	11.5%	FAC
4. Solidago canadensis	5	☐	3.8%	FACU
5. Baccharis halimifolia	5	☐	3.8%	FAC
6. Celtis laevigata	5	☐	3.8%	FACW
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 65	20% of Total Cover: 26	130	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	20	x 3 =	60	
FACU species	105	x 4 =	420	
UPL species	0	x 5 =	0	
Column Totals:	130	**(A)**	490	**(B)**

Prevalence Index = B/A = 3.769

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 12-13

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type [1]	Redox Features Loc [2]	Texture	Remarks
0-12+	10YR 4/1	70%	10YR 5/6	20%	C	M	Clay	
			10YR 4/6	10%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Recd 2 December 2022

Mont Belvieu Tract DP 3

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 4

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** convex **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.005927 **Long.:** -95.049568 **Datum:** NAD83

Soil Map Unit Name: BeaA: Beaumont clay **NWI classification:** PEMf

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks:
Spoil Bank, Mowed Hay Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 4

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Paspalum notatum	70	☑	77.8%	FACU
2. Solidago sempervirens	15	☐	16.7%	FACW
3. Paspalum urvillei	5	☐	5.6%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 45	20% of Total Cover: 18	90	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	5	x 3 =	15	
FACU species	70	x 4 =	280	
UPL species	0	x 5 =	0	
Column Totals:	90	**(A)**	325	**(B)**

Prevalence Index = B/A = 3.611

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 14-17

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-4	10YR	4/2	100%						Clay	
4-12+	10YR	7/2	65%	10YR	4/1	20%	C	M	Clay	
				10YR	5/6	15%	C	M	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Photo: 18. Disturbed Profile, soil material appears to be spoil from dredging activity in Cedar Bayou.

Recd 2 December 2022

Mont Belvieu Tract DP 4

Vegetation

Soil

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 5

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.005831 **Long.:** -95.049853 **Datum:** NAD83

Soil Map Unit Name: BeaA: Beaumont clay **NWI classification:** PEMf

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Mowed Hay Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 4

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 5

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Paspalum notatum	60	☑	54.5%	FACU
2. Paspalum urvillei	40	☑	36.4%	FAC
3. Sesbania drummondii	5	☐	4.5%	FACW
4. Eleocharis rostellata	5	☐	4.5%	OBL
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 55	20% of Total Cover: 22	110	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	5	x 1 =	5
FACW species	5	x 2 =	10
FAC species	40	x 3 =	120
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	110 (A)		375 (B)

Prevalence Index = B/A = 3.409

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 19-20

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-12+	10YR	4/1	80%	7.5YR	5/8	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Mont Belvieu Tract DP 5

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 6

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** convex **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.00874 **Long.:** -95.050472 **Datum:** NAD83

Soil Map Unit Name: BeaA: Beaumont clay **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 7

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 6

		Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum	(Plot size:)				
1.		0	☐	0.0%	
2.		0	☐	0.0%	
3.		0	☐	0.0%	
4.		0	☐	0.0%	
5.		0	☐	0.0%	
6.		0	☐	0.0%	
7.		0	☐	0.0%	
8.		0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover		
Sapling or Sapling/Shrub Stratum	(Plot size:)				
1.		0	☐	0.0%	
2.		0	☐	0.0%	
3.		0	☐	0.0%	
4.		0	☐	0.0%	
5.		0	☐	0.0%	
6.		0	☐	0.0%	
7.		0	☐	0.0%	
8.		0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover		
Shrub Stratum	(Plot size:)				
1.		0	☐	0.0%	
2.		0	☐	0.0%	
3.		0	☐	0.0%	
4.		0	☐	0.0%	
5.		0	☐	0.0%	
6.		0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover		
Herb Stratum	(Plot size:)				
1.	Paspalum notatum	60	☑	52.2%	FACU
2.	Cyperus pseudovegetus	25	☑	21.7%	FACW
3.	Axonopus fissifolius	20	☐	17.4%	FACW
4.	Eleocharis acicularis	10	☐	8.7%	OBL
5.		0	☐	0.0%	
6.		0	☐	0.0%	
7.		0	☐	0.0%	
8.		0	☐	0.0%	
9.		0	☐	0.0%	
10.		0	☐	0.0%	
11.		0	☐	0.0%	
12.		0	☐	0.0%	
50% of Total Cover: 57.5	20% of Total Cover: 23	115	= Total Cover		
Woody Vine Stratum	(Plot size:)				
1.		0	☐	0.0%	
2.		0	☐	0.0%	
3.		0	☐	0.0%	
4.		0	☐	0.0%	
5.		0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	10	x 1 =	10
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	115 **(A)**		340 **(B)**

Prevalence Index = B/A = 2.957

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

Photos: 21-22

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-12+	10YR	4/1	80%	7.5YR	5/8	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Recd 2 December 2022

Mont Belvieu Tract DP 6

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 7

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** convex **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.009733 **Long.:** -95.048592 **Datum:** NAD83

Soil Map Unit Name: LeaA: League clay, 0 to 1 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 7

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Paspalum notatum	40	☑	40.0%	FACU
2. Sporobolus indicus	25	☑	25.0%	FACU
3. Axonopus fissifolius	20	☑	20.0%	FACW
4. Cyperus pseudovegetus	15	☐	15.0%	FACW
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 50	20% of Total Cover: 20	100	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	100 **(A)**		330 **(B)**

Prevalence Index = B/A = 3.300

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 25-26

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-12+	10YR	4/1	80%	7.5YR	5/8	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Recd 2 December 2022

Mont Belvieu Tract DP 7

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 8

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.006431 **Long.:** -95.047014 **Datum:** NAD83

Soil Map Unit Name: LeaA: League clay, 0 to 1 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 8

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Axonopus fissifolius	30	☑	33.3%	FACW
2. Paspalum notatum	20	☑	22.2%	FACU
3. Eleocharis acicularis	20	☑	22.2%	OBL
4. Cyperus pseudovegetus	10	☐	11.1%	FACW
5. Diodia virginiana	5	☐	5.6%	FACW
6. Cyperus articulatus	5	☐	5.6%	OBL
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 45	20% of Total Cover: 18	90	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	25	x 1 =	25
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	90 (A)		195 (B)

Prevalence Index = B/A = 2.167

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

Photos: 27-28

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 8

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-12+	10YR	4/1	80%	7.5YR	5/8	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Mont Belvieu Tract DP 8

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 9

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.004144 **Long.:** -95.045735 **Datum:** NAD83

Soil Map Unit Name: BeaA: Beaumont clay **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 9

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Paspalum notatum	90	☑	85.7%	FACU
2. Cyperus pseudovegetus	10	☐	9.5%	FACW
3. Sporobolus indicus	5	☐	4.8%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 52.5	20% of Total Cover: 21	105	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	0	x 3 =	0	
FACU species	95	x 4 =	380	
UPL species	0	x 5 =	0	
Column Totals:	105	**(A)**	400	**(B)**

Prevalence Index = B/A = 3.810

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 31-32

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 9

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-12+	10YR	4/1	80%	7.5YR	5/8	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Recd 2 December 2022

Mont Belvieu Tract DP 9

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 10

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.00287 **Long.:** -95.044296 **Datum:** NAD83

Soil Map Unit Name: LeaA: League clay, 0 to 1 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 10

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Eleocharis acicularis	60	☑	57.1%	OBL
2. Cyperus articulatus	20	☐	19.0%	OBL
3. Paspalum notatum	10	☐	9.5%	FACU
4. Diodia virginiana	10	☐	9.5%	FACW
5. Sabal minor	5	☐	4.8%	FACW
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 52.5	20% of Total Cover: 21	105	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	80	x 1 =	80
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	105 **(A)**		150 **(B)**

Prevalence Index = B/A = 1.429

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

Photos: 33-34

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 10

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc [2]	Texture	Remarks
0-12+	10YR	4/1	80%	7.5YR	5/8	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Mont Belvieu Tract DP 10

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 11

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.003964 **Long.:** -95.042689 **Datum:** NAD83

Soil Map Unit Name: LeaA: League clay, 0 to 1 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 11

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. Paspalum notatum	90	☑	85.7%	FACU
2. Cyperus pseudovegetus	10	☐	9.5%	FACW
3. Sporobolus indicus	5	☐	4.8%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 52.5	20% of Total Cover: 21	105	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	95	x 4 =	380
UPL species	0	x 5 =	0
Column Totals:	105 **(A)**		400 **(B)**

Prevalence Index = B/A = 3.810

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type [1]	Redox Features Loc [2]	Texture	Remarks
0-12+	10YR 4/2	80%	7.5YR 5/6	20%	C	M/PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 12

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.000988 **Long.:** -95.038448 **Datum:** NAD83

Soil Map Unit Name: LeaA: League clay, 0 to 1 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 12

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. **Paspalum notatum**	90	☑	94.7%	FACU
2. **Andropogon virginicus**	5	☐	5.3%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 47.5	20% of Total Cover: 19	95	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	90	x 4 =	360	
UPL species	0	x 5 =	0	
Column Totals:	95	**(A)**	375	**(B)**

Prevalence Index = B/A = 3.947

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 40-41

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type [1]	Loc [2]	Texture	Remarks
0-12+	10YR 4/2	80%	7.5YR 4/6	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils [3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Mont Belvieu Tract DP 12

Vegetation

Recd 2 December 2022

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Mont Belvieu **City/County:** Harris **Sampling Date:** 11-Dec-17

Applicant/Owner: Delta Land Services **State:** TX **Sampling Point:** 13

Investigator(s): J. Jarreau, B, Delany **Section, Township, Range:** S T R

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): MLRA 150A in LRR T **Lat.:** 30.001477 **Long.:** -95.037648 **Datum:** NAD83

Soil Map Unit Name: LeaA: League clay, 0 to 1 percent slopes **NWI classification:** N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Grazing Pasture, see Atypical Data Form 3.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of 2 required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:
Located within FEMA Flood Zone AE

Recd 2 December 2022

VEGETATION (Five/Four Strata) - Use scientific names of plants.

Sampling Point: 13

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Sapling or Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	
Herb Stratum (Plot size:)				
1. **Paspalum notatum**	100	☑	95.2%	FACU
2. **Andropogon virginicus**	5	☐	4.8%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
50% of Total Cover: 52.5	20% of Total Cover: 21	105	= Total Cover	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
50% of Total Cover: 0	20% of Total Cover: 0	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	100	x 4 =	400	
UPL species	0	x 5 =	0	
Column Totals:	105	**(A)**	415	**(B)**

Prevalence Index = B/A = 3.952

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

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

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

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1m) tall.

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

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

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Photos: 42-43

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: 13

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type [1]	Redox Features Loc [2]	Texture	Remarks
0-12+	10YR 4/2	80%	7.5YR 4/6	20%	C	PL	Clay	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Muck Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Recd 2 December 2022

Mont Belvieu Tract DP 13

Vegetation

APPENDIX 1.2

DELINEATION FEATURE SPATIAL ATTRIBUTES

Point_ID	Max_PDOP	GPS_Date	Datafile	Horz_Prec	Easting	Northing	Longitude	Latitude
1	1.4	12/11/2017	20171211_JEANSWLD.SS	1.1	302398.118066	3320881.647060	-95.048640	30.002972
2	1.1	12/11/2017	20171211_JEANSWLD.SS	1.5	302281.453998	3320986.330670	-95.049868	30.003897
3	1.1	12/11/2017	20171211_JEANSWLD.SS	1.6	302536.465378	3321026.738410	-95.047233	30.004303
4	1.0	12/11/2017	20171211_JEANSWLD.SS	1.6	302314.445747	3321210.832770	-95.049568	30.005927
5	1.1	12/11/2017	20171211_JEANSWLD.SS	1.7	302286.746141	3321200.638450	-95.049853	30.005831
6	1.1	12/11/2017	20171211_JEANSWLD.SS	1.5	302232.754519	3321524.193280	-95.050472	30.008740
7	1.2	12/11/2017	20171211_JEANSWLD.SS	1.8	302416.145735	3321630.956360	-95.048592	30.009733
8	1.2	12/11/2017	20171211_JEANSWLD.SS	1.6	302561.804551	3321262.207890	-95.047014	30.006431
9	1.3	12/11/2017	20171211_JEANSWLD.SS	1.8	302680.719691	3321006.532690	-95.045735	30.004144
10	1.3	12/11/2017	20171211_JEANSWLD.SS	1.5	302816.983173	3320862.887950	-95.044296	30.002870
11	1.3	12/11/2017	20171211_JEANSWLD.SS	1.5	302974.183908	3320981.352650	-95.042689	30.003964
12	1.1	12/11/2017	20171211_JEANSWLD.SS	1.7	303377.422686	3320644.229730	-95.038448	30.000988
13	1.0	12/11/2017	20171211_JEANSWLD.SS	1.5	303455.585726	3320696.974780	-95.037648	30.001477

FeatureID	Latitude	Longitude	Cowardin	Area	Jurisdiction
Wetland1	30.004247	-95.04528	PEM	27.97	Section 404
OW1	30.004946	-95.048845	RUB	1.83	Section 404
OW2	30.004795	-95.047752	RUB	4.87	Section 404

FeatureID	Cowardin	Jurisdiction	Acres	Longitude	Latitude	Easting	Northing	Interval (m)
Wetland1	PEM	Section 404	27.97	-95.044522	30.005031	302799.47332	3321102.72798	0.00
Wetland1	PEM	Section 404	27.97	-95.044600	30.005031	302791.97114	3321102.86106	12.23
Wetland1	PEM	Section 404	27.97	-95.044617	30.004921	302790.10150	3321090.77692	4.43
Wetland1	PEM	Section 404	27.97	-95.044604	30.004883	302791.23030	3321086.49322	6.54
Wetland1	PEM	Section 404	27.97	-95.044556	30.004841	302795.77912	3321081.79018	7.22
Wetland1	PEM	Section 404	27.97	-95.044528	30.004781	302798.38437	3321075.05880	6.44
Wetland1	PEM	Section 404	27.97	-95.044552	30.004727	302795.99756	3321069.08245	8.14
Wetland1	PEM	Section 404	27.97	-95.044535	30.004655	302797.48707	3321061.07888	5.66
Wetland1	PEM	Section 404	27.97	-95.044489	30.004623	302801.81969	3321057.44377	9.93
Wetland1	PEM	Section 404	27.97	-95.044400	30.004577	302810.31653	3321052.29750	19.36
Wetland1	PEM	Section 404	27.97	-95.044317	30.004419	302818.06210	3321034.55278	52.89
Wetland1	PEM	Section 404	27.97	-95.044091	30.003984	302839.01109	3320985.98768	23.11
Wetland1	PEM	Section 404	27.97	-95.043973	30.003802	302849.99483	3320965.65015	37.05
Wetland1	PEM	Section 404	27.97	-95.043783	30.003512	302867.70081	3320933.10414	23.82
Wetland1	PEM	Section 404	27.97	-95.043708	30.003307	302874.60511	3320910.30586	35.46
Wetland1	PEM	Section 404	27.97	-95.043552	30.003017	302889.01114	3320877.90920	17.19
Wetland1	PEM	Section 404	27.97	-95.043550	30.002862	302888.89448	3320860.71947	26.31
Wetland1	PEM	Section 404	27.97	-95.043385	30.002674	302904.46834	3320839.51284	29.32
Wetland1	PEM	Section 404	27.97	-95.043093	30.002601	302932.51953	3320830.96844	32.27
Wetland1	PEM	Section 404	27.97	-95.042789	30.002480	302961.65175	3320817.08434	25.73
Wetland1	PEM	Section 404	27.97	-95.042595	30.002321	302980.01496	3320799.05822	37.94
Wetland1	PEM	Section 404	27.97	-95.042378	30.002035	303000.39087	3320767.05273	54.98
Wetland1	PEM	Section 404	27.97	-95.042083	30.001611	303027.99972	3320719.50891	28.05
Wetland1	PEM	Section 404	27.97	-95.042015	30.001365	303034.03499	3320692.12053	55.03
Wetland1	PEM	Section 404	27.97	-95.041983	30.000870	303036.22084	3320637.13365	167.29
Wetland1	PEM	Section 404	27.97	-95.043716	30.000877	302868.97632	3320640.89751	10.81
Wetland1	PEM	Section 404	27.97	-95.043665	30.000963	302874.08561	3320650.41990	7.96
Wetland1	PEM	Section 404	27.97	-95.043583	30.000967	302882.03544	3320650.72145	10.11
Wetland1	PEM	Section 404	27.97	-95.043559	30.001056	302884.46349	3320660.53178	32.86
Wetland1	PEM	Section 404	27.97	-95.043722	30.001316	302869.24804	3320689.65837	36.12
Wetland1	PEM	Section 404	27.97	-95.044003	30.001532	302842.57371	3320714.01281	30.09
Wetland1	PEM	Section 404	27.97	-95.044295	30.001628	302814.64196	3320725.19722	22.16
Wetland1	PEM	Section 404	27.97	-95.044520	30.001669	302793.04133	3320730.14295	36.63

Wetland1	PEM	Section 404	27.97	-95.044751	30.001931	302771.22596	3320759.56828	59.99
Wetland1	PEM	Section 404	27.97	-95.045003	30.002426	302747.93563	3320814.85292	34.28
Wetland1	PEM	Section 404	27.97	-95.045158	30.002704	302733.46986	3320845.92965	47.04
Wetland1	PEM	Section 404	27.97	-95.045234	30.003123	302726.98099	3320892.51765	40.75
Wetland1	PEM	Section 404	27.97	-95.045367	30.003472	302714.85370	3320931.42469	40.50
Wetland1	PEM	Section 404	27.97	-95.045397	30.003836	302712.71597	3320971.86361	50.22
Wetland1	PEM	Section 404	27.97	-95.045389	30.004289	302714.32631	3321022.05307	13.22
Wetland1	PEM	Section 404	27.97	-95.045403	30.004408	302713.21689	3321035.22248	6.91
Wetland1	PEM	Section 404	27.97	-95.045368	30.004462	302716.69631	3321041.19172	12.29
Wetland1	PEM	Section 404	27.97	-95.045252	30.004507	302728.02320	3321045.96981	17.14
Wetland1	PEM	Section 404	27.97	-95.045081	30.004548	302744.61809	3321050.24491	16.39
Wetland1	PEM	Section 404	27.97	-95.044920	30.004597	302760.19283	3321055.35981	9.83
Wetland1	PEM	Section 404	27.97	-95.044858	30.004667	302766.35925	3321063.01686	4.73
Wetland1	PEM	Section 404	27.97	-95.044878	30.004706	302764.43846	3321067.33642	8.56
Wetland1	PEM	Section 404	27.97	-95.044966	30.004720	302756.05028	3321069.03878	9.70
Wetland1	PEM	Section 404	27.97	-95.045061	30.004748	302746.94180	3321072.36097	6.08
Wetland1	PEM	Section 404	27.97	-95.045062	30.004803	302746.95264	3321078.44486	8.04
Wetland1	PEM	Section 404	27.97	-95.044987	30.004835	302754.24786	3321081.81820	5.80
Wetland1	PEM	Section 404	27.97	-95.044942	30.004869	302758.65106	3321085.58698	7.80
Wetland1	PEM	Section 404	27.97	-95.044901	30.004930	302762.65770	3321092.28363	7.60
Wetland1	PEM	Section 404	27.97	-95.044902	30.004999	302762.75453	3321099.88399	4.79
Wetland1	PEM	Section 404	27.97	-95.044923	30.005038	302760.81944	3321104.27106	143.96
Wetland1	PEM	Section 404	27.97	-95.046415	30.005029	302616.86598	3321105.82599	20.53
Wetland1	PEM	Section 404	27.97	-95.046464	30.005209	302612.41624	3321125.86780	15.76
Wetland1	PEM	Section 404	27.97	-95.046372	30.005326	302621.59364	3321138.67932	6.90
Wetland1	PEM	Section 404	27.97	-95.046349	30.005385	302623.87236	3321145.18964	6.80
Wetland1	PEM	Section 404	27.97	-95.046410	30.005416	302618.08178	3321148.75847	8.41
Wetland1	PEM	Section 404	27.97	-95.046470	30.005472	302612.41070	3321154.96728	7.70
Wetland1	PEM	Section 404	27.97	-95.046427	30.005530	302616.66940	3321161.38798	13.16
Wetland1	PEM	Section 404	27.97	-95.046382	30.005642	302621.19697	3321173.74862	23.68
Wetland1	PEM	Section 404	27.97	-95.046472	30.005841	302612.94290	3321195.94665	29.02
Wetland1	PEM	Section 404	27.97	-95.046664	30.006043	302594.78893	3321218.59279	33.11
Wetland1	PEM	Section 404	27.97	-95.046961	30.006193	302566.46619	3321235.74711	25.96
Wetland1	PEM	Section 404	27.97	-95.047219	30.006258	302541.68517	3321243.48228	22.46

Wetland1	PEM	Section 404	27.97	-95.047422	30.006359	302522.36336	3321254.93842	21.87
Wetland1	PEM	Section 404	27.97	-95.047624	30.006447	302502.98179	3321265.07457	23.35
Wetland1	PEM	Section 404	27.97	-95.047840	30.006542	302482.31012	3321275.93047	18.03
Wetland1	PEM	Section 404	27.97	-95.047925	30.006687	302474.44720	3321292.15870	12.71
Wetland1	PEM	Section 404	27.97	-95.047942	30.006800	302473.03485	3321304.78820	15.42
Wetland1	PEM	Section 404	27.97	-95.048055	30.006898	302462.29296	3321315.85598	15.08
Wetland1	PEM	Section 404	27.97	-95.048190	30.006967	302449.42172	3321323.71341	19.83
Wetland1	PEM	Section 404	27.97	-95.048288	30.007125	302440.29858	3321341.32137	23.16
Wetland1	PEM	Section 404	27.97	-95.048295	30.007333	302440.02423	3321364.48089	28.44
Wetland1	PEM	Section 404	27.97	-95.048439	30.007557	302426.60978	3321389.55791	24.87
Wetland1	PEM	Section 404	27.97	-95.048633	30.007705	302408.18699	3321406.26414	49.94
Wetland1	PEM	Section 404	27.97	-95.049085	30.007924	302365.01311	3321431.36559	49.05
Wetland1	PEM	Section 404	27.97	-95.049537	30.008126	302321.74961	3321454.48709	35.76
Wetland1	PEM	Section 404	27.97	-95.049868	30.008271	302290.09711	3321471.13088	22.46
Wetland1	PEM	Section 404	27.97	-95.050071	30.008371	302270.77534	3321482.58708	36.19
Wetland1	PEM	Section 404	27.97	-95.050416	30.008499	302237.71323	3321497.31067	47.94
Wetland1	PEM	Section 404	27.97	-95.050841	30.008723	302197.20924	3321522.95269	19.20
Wetland1	PEM	Section 404	27.97	-95.050967	30.008858	302185.32667	3321538.04021	27.77
Wetland1	PEM	Section 404	27.97	-95.051008	30.009105	302181.82965	3321565.58704	78.38
Wetland1	PEM	Section 404	27.97	-95.050212	30.008962	302258.29537	3321548.36951	44.17
Wetland1	PEM	Section 404	27.97	-95.049790	30.008809	302298.76188	3321530.66536	36.17
Wetland1	PEM	Section 404	27.97	-95.049460	30.008654	302330.22858	3321512.83956	44.46
Wetland1	PEM	Section 404	27.97	-95.049061	30.008453	302368.34411	3321489.95110	57.65
Wetland1	PEM	Section 404	27.97	-95.048560	30.008170	302416.08523	3321457.63264	62.90
Wetland1	PEM	Section 404	27.97	-95.048057	30.007809	302463.97195	3321416.84240	58.07
Wetland1	PEM	Section 404	27.97	-95.047613	30.007455	302506.07467	3321376.84308	32.69
Wetland1	PEM	Section 404	27.97	-95.047407	30.007222	302525.51925	3321350.56724	43.56
Wetland1	PEM	Section 404	27.97	-95.047154	30.006896	302549.26169	3321314.04441	30.46
Wetland1	PEM	Section 404	27.97	-95.046913	30.006719	302572.16106	3321293.96111	30.93
Wetland1	PEM	Section 404	27.97	-95.046609	30.006630	302601.32247	3321283.64683	32.49
Wetland1	PEM	Section 404	27.97	-95.046300	30.006513	302630.86847	3321270.14069	10.91
Wetland1	PEM	Section 404	27.97	-95.046202	30.006463	302640.17522	3321264.44196	156.91
Wetland1	PEM	Section 404	27.97	-95.045747	30.005105	302681.45710	3321113.05816	446.71
Wetland1	PEM	Section 404	27.97	-95.041118	30.005169	303128.16403	3321112.21347	9.01

Wetland1	PEM	Section 404	27.97	-95.041117	30.005088	303128.03513	3321103.19976	328.56
Wetland1	PEM	Section 404	27.97	-95.044522	30.005031	302799.47332	3321102.72798	245.98
OW1	RUB	Section 404	1.83	-95.046614	30.003762	302595.14664	3320965.76400	0.00
OW1	RUB	Section 404	1.83	-95.046708	30.003626	302585.74164	3320950.84645	20.83
OW1	RUB	Section 404	1.83	-95.046880	30.003740	302569.39544	3320963.75512	46.87
OW1	RUB	Section 404	1.83	-95.047295	30.003960	302529.79129	3320988.82717	20.09
OW1	RUB	Section 404	1.83	-95.047479	30.004045	302512.24570	3320998.61568	17.31
OW1	RUB	Section 404	1.83	-95.047630	30.004130	302497.86810	3321008.26079	53.66
OW1	RUB	Section 404	1.83	-95.048121	30.004356	302450.89593	3321034.19546	42.42
OW1	RUB	Section 404	1.83	-95.048493	30.004561	302415.44408	3321057.49238	45.04
OW1	RUB	Section 404	1.83	-95.048863	30.004808	302380.20735	3321085.54128	12.39
OW1	RUB	Section 404	1.83	-95.048968	30.004872	302370.22212	3321092.87128	6.36
OW1	RUB	Section 404	1.83	-95.049016	30.004912	302365.66136	3321097.31034	11.98
OW1	RUB	Section 404	1.83	-95.049096	30.004995	302358.14772	3321106.64478	29.92
OW1	RUB	Section 404	1.83	-95.049343	30.005158	302334.64861	3321125.16806	20.56
OW1	RUB	Section 404	1.83	-95.049486	30.005295	302321.06193	3321140.59726	30.03
OW1	RUB	Section 404	1.83	-95.049756	30.005430	302295.30745	3321156.04817	21.73
OW1	RUB	Section 404	1.83	-95.049968	30.005497	302275.02631	3321163.84424	15.14
OW1	RUB	Section 404	1.83	-95.050102	30.005567	302262.16102	3321171.83370	53.59
OW1	RUB	Section 404	1.83	-95.050537	30.005868	302220.85130	3321205.97743	20.64
OW1	RUB	Section 404	1.83	-95.050669	30.006015	302208.36844	3321222.41483	19.41
OW1	RUB	Section 404	1.83	-95.050763	30.006170	302199.62935	3321239.74092	16.28
OW1	RUB	Section 404	1.83	-95.050858	30.006291	302190.72296	3321253.37104	10.53
OW1	RUB	Section 404	1.83	-95.050961	30.006322	302180.83445	3321256.99313	9.22
OW1	RUB	Section 404	1.83	-95.051054	30.006342	302171.91968	3321259.35433	13.88
OW1	RUB	Section 404	1.83	-95.051064	30.006467	302171.18809	3321273.21788	15.73
OW1	RUB	Section 404	1.83	-95.050902	30.006449	302186.75974	3321271.01001	22.30
OW1	RUB	Section 404	1.83	-95.050708	30.006340	302205.24176	3321258.53365	16.42
OW1	RUB	Section 404	1.83	-95.050619	30.006214	302213.59625	3321244.39945	20.61
OW1	RUB	Section 404	1.83	-95.050542	30.006040	302220.65575	3321225.03308	23.18
OW1	RUB	Section 404	1.83	-95.050372	30.005893	302236.83459	3321208.42837	33.10
OW1	RUB	Section 404	1.83	-95.050109	30.005701	302261.77425	3321186.66539	26.49
OW1	RUB	Section 404	1.83	-95.049872	30.005581	302284.43245	3321172.94186	27.59
OW1	RUB	Section 404	1.83	-95.049600	30.005503	302310.47374	3321163.82689	29.32

OW1	RUB	Section 404	1.83	-95.049336	30.005372	302335.72413	3321148.92788	12.33
OW1	RUB	Section 404	1.83	-95.049273	30.005276	302341.58207	3321138.08115	19.84
OW1	RUB	Section 404	1.83	-95.049124	30.005153	302355.76845	3321124.21205	23.90
OW1	RUB	Section 404	1.83	-95.048925	30.005024	302374.68290	3321109.59985	14.62
OW1	RUB	Section 404	1.83	-95.048813	30.004936	302385.34061	3321099.59402	16.18
OW1	RUB	Section 404	1.83	-95.048684	30.004842	302397.55842	3321088.98850	58.50
OW1	RUB	Section 404	1.83	-95.048195	30.004530	302444.10037	3321053.54986	13.48
OW1	RUB	Section 404	1.83	-95.048071	30.004474	302455.98138	3321047.19222	14.04
OW1	RUB	Section 404	1.83	-95.047935	30.004428	302468.96619	3321041.84276	51.80
OW1	RUB	Section 404	1.83	-95.047471	30.004193	302513.25058	3321014.97160	40.20
OW1	RUB	Section 404	1.83	-95.047098	30.004031	302548.91753	3320996.42669	27.21
OW1	RUB	Section 404	1.83	-95.046856	30.003906	302572.07988	3320982.15134	16.60
OW1	RUB	Section 404	1.83	-95.046722	30.003813	302584.82571	3320971.52194	11.82
OW1	RUB	Section 404	1.83	-95.046614	30.003762	302595.14664	3320965.76400	17.63
OW2	RUB	Section 10	4.87	-95.046708	30.003626	302585.74164	3320950.84645	0.00
OW2	RUB	Section 10	4.87	-95.046614	30.003762	302595.14664	3320965.76400	23.22
OW2	RUB	Section 10	4.87	-95.046558	30.003966	302600.92625	3320988.25274	13.74
OW2	RUB	Section 10	4.87	-95.046554	30.004090	302601.54762	3321001.98064	52.48
OW2	RUB	Section 10	4.87	-95.046627	30.004559	302595.44178	3321054.10661	14.38
OW2	RUB	Section 10	4.87	-95.046711	30.004666	302587.51962	3321066.10490	25.26
OW2	RUB	Section 10	4.87	-95.046915	30.004809	302568.14886	3321082.32493	16.79
OW2	RUB	Section 10	4.87	-95.047066	30.004884	302553.72347	3321090.91405	20.56
OW2	RUB	Section 10	4.87	-95.047267	30.004946	302534.47443	3321098.13427	29.81
OW2	RUB	Section 10	4.87	-95.047508	30.005114	302511.52720	3321117.16159	35.16
OW2	RUB	Section 10	4.87	-95.047770	30.005335	302486.73090	3321142.09247	16.60
OW2	RUB	Section 10	4.87	-95.047904	30.005429	302473.98511	3321152.72188	16.86
OW2	RUB	Section 10	4.87	-95.048032	30.005532	302461.81511	3321164.38338	21.98
OW2	RUB	Section 10	4.87	-95.048232	30.005628	302442.73338	3321175.29959	45.89
OW2	RUB	Section 10	4.87	-95.048659	30.005809	302401.88213	3321196.19553	32.00
OW2	RUB	Section 10	4.87	-95.048939	30.005964	302375.16727	3321213.80621	35.53
OW2	RUB	Section 10	4.87	-95.049252	30.006134	302345.35615	3321233.14428	10.84
OW2	RUB	Section 10	4.87	-95.049332	30.006202	302337.77083	3321240.89473	20.40
OW2	RUB	Section 10	4.87	-95.049453	30.006353	302326.36785	3321257.81230	16.79
OW2	RUB	Section 10	4.87	-95.049531	30.006488	302319.11714	3321272.95468	14.23

OW2	RUB	Section 10	4.87	-95.049582	30.006609	302314.43470	3321286.39357	19.09
OW2	RUB	Section 10	4.87	-95.049709	30.006741	302302.40814	3321301.22306	97.54
OW2	RUB	Section 10	4.87	-95.050402	30.007382	302236.89981	3321373.49758	55.75
OW2	RUB	Section 10	4.87	-95.050818	30.007730	302197.41320	3321412.84955	22.44
OW2	RUB	Section 10	4.87	-95.050983	30.007873	302181.73851	3321428.90236	15.02
OW2	RUB	Section 10	4.87	-95.051101	30.007961	302170.55285	3321438.93211	9.51
OW2	RUB	Section 10	4.87	-95.051189	30.008001	302162.20311	3321443.48182	19.53
OW2	RUB	Section 10	4.87	-95.051203	30.008177	302161.17398	3321462.98395	9.35
OW2	RUB	Section 10	4.87	-95.051108	30.008162	302170.34234	3321461.16287	12.38
OW2	RUB	Section 10	4.87	-95.051011	30.008088	302179.48772	3321452.81271	21.57
OW2	RUB	Section 10	4.87	-95.050834	30.007969	302196.33791	3321439.35207	23.22
OW2	RUB	Section 10	4.87	-95.050658	30.007827	302213.06859	3321423.25147	37.75
OW2	RUB	Section 10	4.87	-95.050386	30.007582	302238.80126	3321395.63274	21.73
OW2	RUB	Section 10	4.87	-95.050220	30.007449	302254.52377	3321380.63593	29.16
OW2	RUB	Section 10	4.87	-95.050007	30.007263	302274.73533	3321359.61607	16.44
OW2	RUB	Section 10	4.87	-95.049890	30.007155	302285.82539	3321347.47436	37.75
OW2	RUB	Section 10	4.87	-95.049624	30.006906	302311.00620	3321319.35155	15.86
OW2	RUB	Section 10	4.87	-95.049495	30.006817	302323.24787	3321309.27402	15.25
OW2	RUB	Section 10	4.87	-95.049411	30.006700	302331.12217	3321296.21972	39.50
OW2	RUB	Section 10	4.87	-95.049251	30.006372	302345.86478	3321259.57512	20.24
OW2	RUB	Section 10	4.87	-95.049096	30.006249	302360.57914	3321245.68212	47.23
OW2	RUB	Section 10	4.87	-95.048687	30.006015	302399.58347	3321219.04991	38.29
OW2	RUB	Section 10	4.87	-95.048336	30.005854	302433.13837	3321200.60055	28.92
OW2	RUB	Section 10	4.87	-95.048054	30.005766	302460.18783	3321190.38183	14.23
OW2	RUB	Section 10	4.87	-95.047930	30.005697	302471.99712	3321182.44019	13.87
OW2	RUB	Section 10	4.87	-95.047823	30.005613	302482.15074	3321172.98628	44.33
OW2	RUB	Section 10	4.87	-95.047475	30.005352	302515.20376	3321143.44904	14.62
OW2	RUB	Section 10	4.87	-95.047380	30.005250	302524.20579	3321131.93094	22.42
OW2	RUB	Section 10	4.87	-95.047220	30.005103	302539.32867	3321115.37410	16.10
OW2	RUB	Section 10	4.87	-95.047068	30.005042	302553.82575	3321108.36897	12.34
OW2	RUB	Section 10	4.87	-95.046943	30.005020	302565.87405	3321105.70730	16.59
OW2	RUB	Section 10	4.87	-95.046786	30.004959	302580.89913	3321098.67828	20.72
OW2	RUB	Section 10	4.87	-95.046620	30.004840	302596.69342	3321085.26552	20.24
OW2	RUB	Section 10	4.87	-95.046487	30.004699	302609.20024	3321069.35617	15.62

OW2	RUB	Section 10	4.87	-95.046426	30.004569	302614.89091	3321054.81350	25.29
OW2	RUB	Section 10	4.87	-95.046383	30.004344	302618.51963	3321029.78262	36.78
OW2	RUB	Section 10	4.87	-95.046344	30.004014	302621.62258	3320993.13582	16.99
OW2	RUB	Section 10	4.87	-95.046366	30.003861	302619.27383	3320976.31165	23.75
OW2	RUB	Section 10	4.87	-95.046460	30.003663	302609.82215	3320954.51819	17.97
OW2	RUB	Section 10	4.87	-95.046465	30.003501	302609.00960	3320936.56632	16.55
OW2	RUB	Section 10	4.87	-95.046420	30.003357	302613.04461	3320920.51135	19.45
OW2	RUB	Section 10	4.87	-95.046287	30.003225	302625.59926	3320905.65799	20.39
OW2	RUB	Section 10	4.87	-95.046183	30.003065	302635.37053	3320887.75614	17.22
OW2	RUB	Section 10	4.87	-95.046132	30.002916	302639.90965	3320871.14927	16.92
OW2	RUB	Section 10	4.87	-95.046132	30.002764	302639.67290	3320854.22949	15.86
OW2	RUB	Section 10	4.87	-95.046218	30.002642	302631.13160	3320840.86005	15.12
OW2	RUB	Section 10	4.87	-95.046314	30.002534	302621.60600	3320829.12240	7.57
OW2	RUB	Section 10	4.87	-95.046349	30.002473	302618.12734	3320822.40183	7.09
OW2	RUB	Section 10	4.87	-95.046318	30.002415	302621.00854	3320815.92248	9.51
OW2	RUB	Section 10	4.87	-95.046321	30.002329	302620.57837	3320806.41854	35.89
OW2	RUB	Section 10	4.87	-95.046243	30.002013	302627.44904	3320771.18838	21.77
OW2	RUB	Section 10	4.87	-95.046139	30.001839	302637.14865	3320751.70253	49.99
OW2	RUB	Section 10	4.87	-95.045866	30.001455	302662.71656	3320708.74808	34.34
OW2	RUB	Section 10	4.87	-95.045633	30.001221	302684.69574	3320682.35749	18.91
OW2	RUB	Section 10	4.87	-95.045461	30.001140	302701.20929	3320673.14482	17.57
OW2	RUB	Section 10	4.87	-95.045287	30.001093	302717.89012	3320667.62812	28.01
OW2	RUB	Section 10	4.87	-95.044997	30.001086	302745.87396	3320666.36156	20.33
OW2	RUB	Section 10	4.87	-95.044789	30.001053	302765.79447	3320662.28548	41.79
OW2	RUB	Section 10	4.87	-95.044370	30.000957	302806.02009	3320650.94146	22.50
OW2	RUB	Section 10	4.87	-95.044158	30.000874	302826.37932	3320641.36436	7.36
OW2	RUB	Section 10	4.87	-95.044234	30.000873	302819.01681	3320641.35053	58.67
OW2	RUB	Section 10	4.87	-95.044821	30.001009	302762.61780	3320657.51609	29.11
OW2	RUB	Section 10	4.87	-95.045123	30.001016	302733.53441	3320658.75519	25.21
OW2	RUB	Section 10	4.87	-95.045383	30.001040	302708.52440	3320661.90345	28.29
OW2	RUB	Section 10	4.87	-95.045656	30.001132	302682.31145	3320672.53328	27.83
OW2	RUB	Section 10	4.87	-95.045895	30.001273	302659.55674	3320688.54878	99.16
OW2	RUB	Section 10	4.87	-95.046366	30.002067	302615.66442	3320777.46627	48.41
OW2	RUB	Section 10	4.87	-95.046568	30.002467	302597.04216	3320822.15058	10.72

OW2	RUB	Section 10	4.87	-95.046561	30.002564	302597.86004	3320832.84259	7.57
OW2	RUB	Section 10	4.87	-95.046542	30.002630	302599.77861	3320840.16285	28.88
OW2	RUB	Section 10	4.87	-95.046366	30.002841	302617.22193	3320863.18184	12.70
OW2	RUB	Section 10	4.87	-95.046368	30.002955	302617.26749	3320875.87765	22.14
OW2	RUB	Section 10	4.87	-95.046489	30.003125	302605.96002	3320894.90719	13.95
OW2	RUB	Section 10	4.87	-95.046573	30.003227	302598.01395	3320906.37749	22.58
OW2	RUB	Section 10	4.87	-95.046694	30.003402	302586.73039	3320925.93503	16.60
OW2	RUB	Section 10	4.87	-95.046716	30.003550	302584.83126	3320942.42241	8.47
OW2	RUB	Section 10	4.87	-95.046708	30.003626	302585.74164	3320950.84645	0.00

Attachment E. Planting List

PRM Project Planting List

Common Name[2]	Scientific Name	AGCP Wetland Indicator[3]	Percent Range of Composition
PFO Rehabilitation			
Hard Mast (approximately 65-75%)			
water hickory	*Carya aquatica*	OBL	15-20
willow oak	*Quercus phellos*	FACW	15-20
water oak	*Quercus nigra*	FAC	15-20
overcup oak	*Quercus lyrata*	FACW	15-20
cherrybark oak	*Quercus pagoda*	FACW	<1-5
Soft Mast (approximately 15-25%)			
sugarberry	*Celtis laevigata*	FACW	5-10
green ash	*Fraxinus pennsylvanica*	FACW	5-10
common persimmon	*Diospyros virginiana*	FAC	5-10
American elm	*Ulmus americana*	FAC	5-10
cedar elm	*Ulmus crassifolia*	FAC	5-10
possumhaw	*Ilex decidua*	FACW	<1-5
green hawthorn	*Crateagus viridus*	FACW	<1-5
red mulberry	*Morus rubra*	FACU	<1-5

[1] The exact species and quantities for planting will be determined by the availability of such species from commercial nurseries providing localized ecotype seedlings.

[2] The above-referenced and subsequent scientific plant names are from NRCS 2018.

[3] The wetland plant indicator status for the Atlantic and Gulf Coastal Plain per the 2016 National Wetland Plant List (Lichvar et al)

Attachment F. Construction, Establishment, and Long-term Finances

Recd 2 December 2022

Costs Analysis
Lone Star Frac IX

Item	Units	Unit Values	Price Per Unit	Total Cost
Boundary Maintenance	Mile	1.4	$ 150.00	$ 210.00
PFO Invasive Species Control	Acre	38.7	$ 90.00	$ 3,483.00
PFO Invasive Species Control Mobilization	Fixed	Fixed	Fixed	$ 200.00
PFO Inspections (rate and per diem)	Day	1.0	$ 800.00	$ 800.00
Taxes on PFO Project Acreage	Acre	38.7	$ 10.00	$ 387.00
PFO Planting Acreage	Acre	38.7	NA	NA
Site Prep per Acre (disking and ripping)	Acre	38.7	$ 40.00	$ 1,548.00
Site Prep per Acre (herbicides)	Acre	38.7	$ 40.00	$ 1,548.00
Seedling Planting Rate	Trees/Acre	436.0	NA	NA
Seedling Cost	Seedling	16873	$ 0.22	$ 3,712.10
Seedling Installation Rate	Seedling	16873	$ 0.17	$ 2,868.44
Seedling and Planting Cost	Seedling	16873	$ 0.39	$ 6,580.55
Perimeter Fencing (Livestock Exlustion Fence)	Linear Foot	3000	$ 3.50	$ 10,500.00
Hydrology Restoration (Earth Moving; blade/disk)	Cubic Yard	6000	$ 0.50	$ 3,000.00
Site Prep and Pre-emergent Spray (PFO)	Acre	38.7	$ 100.00	$ 3,870.00
Total Credit Acreage	Acre	38.7	NA	NA
Conservation Easement Acreage	Acre	38.7	NA	NA
PFO Mitigation Acres	Acre	38.7	100%	

PFO Construction Costs
Lone Star Frac IX

PFO Construction Costs

Item	Units	Unit Values	Price Per Unit	Percent	Cost
Hydrology Restoration	Cubic Yards	6000	$ 0.50	100%	$ 3,000.00
PFO Invasive Species Control	Herbicide	3483	-	100%	$ 3,483.00
PFO Invasive Species Mobilization	Application	200	-	100%	$ 200.00
PFO Site Prep (disking, ripping, and pre-emergent herbicide)	Acres	38.7	$ 80.00	100%	$ 3,096.00
Planting (Seedlings and Installation)	Seedlings	16873	$ 0.39	100%	$ 6,580.55
Livestock Exclusion Fence	Linear Foot	3000	$ 3.50	100%	$ 10,500.00
PFO Subtotal					**$ 26,859.55**
PFO Construction Cost with 5% Contingency					**$ 28,202.53**

Total PFO Construction **$ 28,202.53**

Total PFO Construction and Establishment **$ 68,203.07**

Establishment Costs for
Lone Star Frac IX

Year	Event	Event Cost	Percent	Occurences /Year	Year 0 Cost	Inflationary Adjustment from Year 0	Percent of Cost
1	Monitoring/ Inspection	$ 800.00	100%	2	$ 1,600.00		
1	Replant (30%)	$ 6,580.55	30%	1	$ 1,974.16		
1	Invasive Species Control (100%)	$ 3,483.00	100%	1	$ 3,483.00		
1	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
1	Property Taxes	$ 387.00	100%	1	$ 387.00		
1	***Subtotal***	***$ 10,863.55***			***$ 7,644.16***	**$ 7,831.45**	**22.6%**
2	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
2	Replant (10%)	$ 6,580.55	10%	1	$ 658.05		
2	Invasive Species Control (25%)	$ 3,483.00	25%	1	$ 870.75		
2	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
2	Property Taxes	$ 387.00	100%	1	$ 387.00		
2	***Subtotal***	***$ 11,450.55***			***$ 2,915.80***	**$ 3,060.43**	**8.6%**
3	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
3	Invasive Species Control (20%)	$ 3,483.00	20%	1	$ 696.60		
3	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
3	Property Taxes	$ 387.00	100%	1	$ 387.00		
3	***Subtotal***	***$ 4,870.00***			***$ 2,083.60***	**$ 2,240.53**	**6.1%**
4	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
4	Invasive Species Control (10%)	$ 3,483.00	10%	1	$ 348.30		
4	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
4	Property Taxes	$ 387.00	100%	1	$ 387.00		
4	***Subtotal***	***$ 4,870.00***			***$ 1,735.30***	**$ 1,911.71**	**5.1%**
5	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
5	Invasive Species Control (5%)	$ 3,483.00	10%	1	$ 348.30		
5	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
5	Property Taxes	$ 387.00	100%	1	$ 387.00		
5	***Subtotal***	***$ 4,870.00***			***$ 1,735.30***	**$ 1,958.55**	**5.1%**
6	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
6	Invasive Species Control (5%)	$ 3,483.00	10%	1	$ 348.30		
6	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
6	Property Taxes	$ 387.00	100%	1	$ 387.00		
6	***Subtotal***	***$ 4,870.00***			***$ 1,735.30***	**$ 2,006.53**	**5.1%**
7	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
7	Invasive Species Control (5%)	$ 3,483.00	10%	1	$ 348.30		
7	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
7	Property Taxes	$ 387.00	100%	1	$ 387.00		
7	***Subtotal***	***$ 4,870.00***			***$ 1,735.30***	**$ 2,055.69**	**5.1%**
8	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
8	Invasive Species Control (5%)	$ 3,483.00	10%	1	$ 348.30		
8	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
8	Property Taxes	$ 387.00	100%	1	$ 387.00		
8	***Subtotal***	***$ 4,870.00***			***$ 1,735.30***	**$ 2,106.06**	**5.1%**
9	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
9	Invasive Species Control (5%)	$ 3,483.00	10%	1	$ 348.30		
9	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
9	Property Taxes	$ 387.00	100%	1	$ 387.00		
9	***Subtotal***	***$ 4,870.00***			***$ 1,735.30***	**$ 2,157.66**	**5.1%**
10	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
10	Invasive Species	$ 3,483.00	10%	1	$ 348.30		
10	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
10	Property Taxes	$ 387.00	100%	1	$ 387.00		
10	Boundary Maintenance	$ 210.00	100%	1	$ 210.00		
10	***Subtotal***	***$ 5,080.00***	***100%***		***$ 1,945.30***	**$ 2,478.03**	**5.7%**
11	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
11	Invasive Species	$ 3,483.00	10%	1	$ 348.30		
11	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
11	Property Taxes	$ 387.00	100%	1	$ 387.00		
11	***Subtotal***	***$ 4,870.00***	***100%***		***$ 1,735.30***	**$ 2,264.68**	**5.1%**
12	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
12	Invasive Species	$ 3,483.00	10%	1	$ 348.30		
12	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
12	Property Taxes	$ 387.00	100%	1	$ 387.00		
12	***Subtotal***	***$ 4,870.00***	***100%***		***$ 1,735.30***	**$ 2,320.16**	**5.1%**
13	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
13	Invasive Species	$ 3,483.00	10%	1	$ 348.30		
13	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
13	Property Taxes	$ 387.00	100%	1	$ 387.00		
13	***Subtotal***	***$ 4,870.00***	***100%***		***$ 1,735.30***	**$ 2,377.00**	**5.1%**
14	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
14	Invasive Species	$ 3,483.00	10%	1	$ 348.30		
14	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		

Establishment Costs for
Lone Star Frac IX

14	Property Taxes	$ 387.00	100%	1	$ 387.00		
14	***Subtotal***	***$ 4,870.00***	***100%***		***$ 1,735.30***	**$ 2,435.24**	**5.1%**
15	Monitoring/ Inspection	$ 800.00	100%	1	$ 800.00		
15	Invasive Species	$ 3,483.00	10%	1	$ 348.30		
15	Invasive Species Mobilization	$ 200.00	100%	1	$ 200.00		
15	Property Taxes	$ 387.00	100%	1	$ 387.00		
15	Boundary Maintenance	$ 210.00	100%	1	$ 210.00		
15	***Subtotal***	***$ 5,080.00***	***100%***		***$ 1,945.30***	**$ 2,796.83**	**5.7%**
	Inflationary rate (2001-2011)		***2.45%***				
	Total Establishment Cost				**$ 33,887.17**	**$ 40,000.55**	**100.0%**

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PFO, Long-Term Annualized Cost Summary
Lone Star Frac IX

Item	Units	Unit Values	Price Per Unit	Unit Percent	Cost	Years	Annualized Cost
Boundary Maintenance (5-year event)	Miles	1.40	$ 150.00	100.0%	$ 210.00	5	$ 42.00
Annual Invasive Species Control	Acre	38.70	$ 90.00	100.0%	$ 3,483.00	1	$ 3,483.00
Annual Inspection	Day	1.00	$ 800.00	100.0%	$ 800.00	1	$ 800.00
Taxes (annual event)	Acre	38.70	$ 10.00	100.0%	$ 387.00	1	$ 387.00
Average Annual Cost (Starting at Year 15)							**$ 4,712.00**
Long-term Land Management and Maintenance Endowment (cap rate 3.5%)							**$ 134,628.57**