RIVERINE FORESTED WETLAND

PERMITTEE RESPONSIBLE MITIGATION PLAN

SWG-2017-00254

TARGA BRINE PONDS 6, 7, 8, AND 9

HARRIS COUNTY, TEXAS

Prepared for

TARGA DOWNSTREAM LLC

DELTA LAND SERVICES

APRIL 9, 2018

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 31.74 acres of PFO with U.S. Army Corps of Engineers (USACE) permit application no. SWG-2017-00245 ("Permit"). Targa (Permittee) is seeking the Permit for the proposed construction of Brine Ponds 6, 7, 8, and 9 (Project), which is located adjacent to their existing facility along Farm-to-Market (FM) Road 1942 in Chambers County, Texas.

The Permittee is proposing to construct four new brine ponds for brine water storage, construct two new stormwater detention ponds and associated riprap outfalls, and construct maintenance roads along the perimeter and in between the proposed brine and stormwater ponds. The Project purpose is to provide seasonal, swing storage capacity to support Targa's existing underground product storage wells and brine injection wells. The construction would provide storage capabilities to fulfill strategic cooperative initiatives and stability within the growing market. The Project's wetland impacts are located in the North Galveston Bay Subbasin (Hydrologic Unit Code [HUC] 12040203) in Harris 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 29.848637° North and longitude 94.943342° West (North American Datum [NAD83]).

The preparation of this PRMP was in accordance with USACE regulations for compensatory mitigation for losses of aquatic resources, codified in 33 CFR § 332. More specifically, the contents 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, will implement, monitor, and provide long-term management of the Permittee Responsible Mitigation Area (PRMA) 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).

Targa conducted a mitigation credit availability screening to determine if sufficient mitigation credits were availability for purchase to compensate for impacts associated with the proposed Project (Attachment B). 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 impacts as a result of the proposed project. However due to recent credit reservations, various upcoming projects requiring mitigation, and pending transactions, Gin City has a high potential of not having sufficient riverine forested credits available for to offset impacts as a result of the proposed Project. 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 26.0 acres (Table 1 and Attachment C). By the end of Year 10, 26.0 acres of PFO wetlands will be restored and perpetually protected.

1.1 Mitigation Property Location

The 26.0-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 Storker 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.

Delta currently operates 15 approved wetland mitigation banks with four approved amendments totaling 8,576.4 mitigation acres and 42,534.1 linear feet of stream restoration within the US Army Corps of Engineers (USACE) New Orleans (CEMVN), Vicksburg, Fort Worth, and Galveston Districts. Delta is currently working within those Districts on 10 pending mitigation banks and three pending addendum, adding another 3,755.7 mitigation acres and 10,348.7 linear feet of stream to our restoration portfolio.

In addition to mitigation banking, Delta serves as the responsible party for the establishment and maintenance of 19 permittee responsible mitigation (PRM) sites consisting of 3,303.6 mitigation acres and 8,251.0 linear feet of stream within the New Orleans, Vicksburg, and Galveston Districts. In total, Delta has restored 10,856.3 acres of wetlands and 51,295.9 linear feet of stream in the Gulf Coastal region.

1.3 Description of the Property

The PRMA is a regularly formed land tract and is located within a broad Cedar Bayou's broad floodplain. The center point of the PRMA is located at latitude 30.007667° North and longitude 95.047193° 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	
95.04931090	° W	30.00904277	° N	95.04768916	° W	30.00586156	° N
95.04816975	° W	30.00790101	° N	95.04803223	° W	30.00607228	° N
95.04621486	° W	30.00651557	° N	95.04824635	° W	30.00618273	° N
95.04617905	° W	30.00649068	° N	95.04840744	° W	30.00630304	° N
95.04610918	° W	30.00628516	° N	95.04871835	° W	30.00649370	° N
95.04583549	° W	30.00548006	° N	95.04912165	° W	30.00684949	° N
95.04575467	° W	30.00524230	° N	95.04969333	° W	30.00739173	° N
95.04575962	° W	30.00524224	° N	95.05068002	° W	30.00827099	° N
95.04576180	° W	30.00524222	° N	95.05112681	° W	30.00863760	° N
95.04579265	° W	30.00524184	° N	95.05115173	° W	30.00865698	° N
95.04643064	° W	30.00523401	° N	95.05122067	° W	30.00960940	° N
95.04644487	° W	30.00523384	° N	95.05125264	° W	30.01005101	° N
95.04683697	° W	30.00522903	° N	95.05116077	° W	30.01005808	° N
95.04702572	° W	30.00542169	° N	95.04950239	° W	30.01018567	° N
95.04747433	° W	30.00574060	° N	95.04931090	° W	30.00904277	° N

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.

2.0 Goal and Objective

The goal of this PRMP is to restore[1] (rehabilitate[2]) 9.1 acres of PFO wetlands and re-establish[3] 15.9 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 leveling of agricultural berms and plugging of agricultural ditches,
- planting 26.0 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 15.9 acres and re-esatablish 9.1 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 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 2018); Harris County comprises approximatley half of the North Galveston Bay watershed. 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. Additionally, the site restoration is consistent with and helps the Cedary Bayou Watershed Partnership achieve the water quality goals stated in the 2015 *Cedar Bayou Watershed Protection Plan*. (Cedar Bayou Watershed Partnership 2015)

From 1950-2002, over 46,900 acres of freshwater and estuarine wetlands have been lost in the Galveston Bay watershed (DallaRosa and Pulich 2016). 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, various upcoming projects requiring mitigation, and pending transactions, Gin City has a high potential of not having sufficient riverine forested credits available for to offset impacts as a result of the proposed Project. Thus, this PRMP was prepared and is being propoed to offet Project impacs. 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 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 Permitte 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 sustainability of the restored PRMA will be driven by rainfall and localized watershed runoff (re-established sheetflow 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. 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

A real estate instrument will be placed on the PRMA for perpetual protection as a conservation area (e.g., deed restriction, protective covenant). Pursuant to 33 CFR § 332.7(a)(5), the Permittee will seek CESWG approval of the real estate instrument either in advance of or concurrently with the commencement of the permitted activity. Furthermore, in accordance with 33 CFR § 332.7(a)(3), the real estate instrument will contain a provision requiring 60-day advance notification to the CESWG before any action is taken to void or modify the easement, including the transfer of title to another party.

In addition, DLS plans to restore the remainder of the 140+ acres as PFO and herbaceous habitats, and a perpetual conservation easement will be recorded in the Harris County Courthouse as needed/required on the remainder of the tract.

After recordation in the real property records of Harris County, a copy of the recorded real estate instrument, clearly showing the book, page, and date of filing, will be provided to the CESWG. Upon execution of the previously described real estate instrument, Ironwood Holdings, LLC shall hold, enforce, and perpetually protect the PRMA as a conservation area, unless the lands are transferred or sold to a public agency, or non-governmental organization, after review and approval by the CESWG 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. 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 9.1 acres; rehabilitation). The delineated wetland is considered jurisdictional due to its adjacency to Cedar Bayou and location in Cedar Bayou's 100-year floodplain (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 western portions still forested in the 1940's (Attachment A). 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 primarily consist of Beaumont clay, 0 to 1 percent slopes (BeaA), which is a poorly drained soil with a 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, three data points (DP) were recorded within the PRMA, two were collected within the PFO rehabilitation area (DP 6 and DP 8), and one was collected within the PFO re-establishment area (DP 7). All three 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 the primary hydrological influences are rainfall and ponding. The PRMA is located along the northeastern edge of an existing spoil bank along Cedar Bayou that carries stormwater runoff south to a drainage ditch that then conveys the runoff eastwardly off the PRMA. Additionally, the property has been graded and levelled to drain water south to the drainage ditch to help improve grazing activities. A small depression (rehabilitation portion) exists in the center of the PRMA, which ponds water during the wetter months. The two data points (DP 6 and 8) 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 multiple secondary wetland hydrology indicators at DPs 6 and 8, which included crayfish burrows (C8) and geomorphic position (D2). One secondary indicator (C8)was observed at DP 7, 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 marsh flatsedge (*Cyperus pseudovegetus*), common carpetgrass (*Axonopus fissifolius*), and needle spikerush (*Eleocharis acicularis*). Common species observed within the PFO re-establishment portion of the PRMA included marsh

flatsedge, bahaiagrass (*Paspalum notatum*), smut grass *(Sporobolus indicus)*, common carpetgrass, and needle spikerush.

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 and SWG Riverine Herbaceous/Shrub iHGM models were 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 both forested and herbaceous 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

Lloyd Engineering, the Permittee's agent, provided iHGM summary data for the impact site shown below in Table 1. 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 (20.14 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 26.0 acres is required to compensate for the 31.74 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	31.74	7.160
MPAC	31.74	20.690
RSEC	31.74	15.910

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

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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	9.1	0.505	4.599
MPAC	9.1	0.679	6.180
RSEC	9.1	0.420	3.822
PFO Re-establishment			
TSSW	16.9	0.822	13.885
MPAC	16.9	0.879	14.858
RSEC	16.9	0.787	13.295
PRM Acreage Total			**26.0**

Table 4. Wetland Impacts and Wetland Mitigation Summary by Function

Impact/Restoration	Acreage	TSSW FCUs	MPAC FCUs	RSEC FCUs
PFO Impacts Summary				
PFO Impacts	31.74	7.160	20.690	15.910
PFO Mitigation Summary				
PFO Rehabilitation	9.1	4.599	6.180	3.822
PFO Re-establishment	16.9	13.885	14.858	13.295
Subtotal	**26.0**	**18.484**	**21.038**	**17.117**
Net Gain in Function		***11.324***	***0.348***	***1.207***

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 rehabiliation area has self-sustaining hydrology as indicated by the data collected from the wetland datapoints. The PRMA re-establishment area is improved pasture and is adjacent to the rehabilitation acreage. The ditch berm along northwest perimeter will be breached to allow water to flow from the drainage ditch through the PRMA from northwest to southeast. The ditch berm / unimproved internal farm road along the nothern boundary of the PRMA will be bladed / disked to natrural elevations to allow sheet flow from north to south. 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).

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. 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 to 10-foot intervals 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. Pursuant to applicable regulations, the CESWG also agrees to provide appropriate oversight to implement the provisions of this PRMP. The CESWG also agrees to review and provide comments on all project plans, annual monitoring reports, and adaptive management contingencies for the PRMA.

For the PFO portions of the PRMA, upon or after tree canopy closure, forest management required to control disease or insect infestation will be performed, if the CESWG determines that 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 rehabilitation portion of 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-estabilsment 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.

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 commensurate with stand age and site conditions by Year 5. 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 Atlantic and Gulf Coastal Plain Regional Supplement (USACE 2010).

9.3 Long-term Success Criteria (Year 10)

By Year 10 on both PFO rehabilitation and re-establishment mitigation areas, 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 annually in the growing season of each monitoring year through achievement of the interim success criteria using established monitoring protocols. The Permittee will collect data on the number and species of planted and naturally occurring species to insure 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, and a permanent field marker (t-post and 8-foot PVC pipe). 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 annually through Year 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 every three years until the long-term success criteria

(Year 10) is achieved. 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 60 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, and Year 10). 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.

The Owner and DLS will be the Long-term Steward charged with management and maintenance responsibilities once long-term success criteria in Section 9.0 are achieved. The Owner 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 $1,611.20 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 $46,034.29. 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 in the event that monitoring reveals certain peformance 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 $26,327.46. The construction and establishment financial assurances will be provided by a casualty insurance policy. The construction cost estimate with 5% contingency adjustment at Year 0 is $7,8443.59 (Attachment F). The PFO establishment cost estimate for Year 1 through Year 10 is $16,442.42 with an annual 2.45% inflationary cost adjustment is $18,482.86. To provide financial assurance protection during construction (Year 0) and establishment (Year 1 through Year 10) and per 33 CFR 332.3(n), the mitigation provider shall 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.

A casualty insurance policy will be purchased for a non-cancellable period of 10 years and 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 for the credits sold. 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. The PRMA's insurer will be Ecosystems Insurance Associates, LLC (www.eco-ins.com), which has provided coverage in that district. Ecosystems Insurance Associates, LLC is rated by AM Best Rating Service with an A-XV rating, which is defined as an excellent rating with $2 billion or more in assets.

14.0 References

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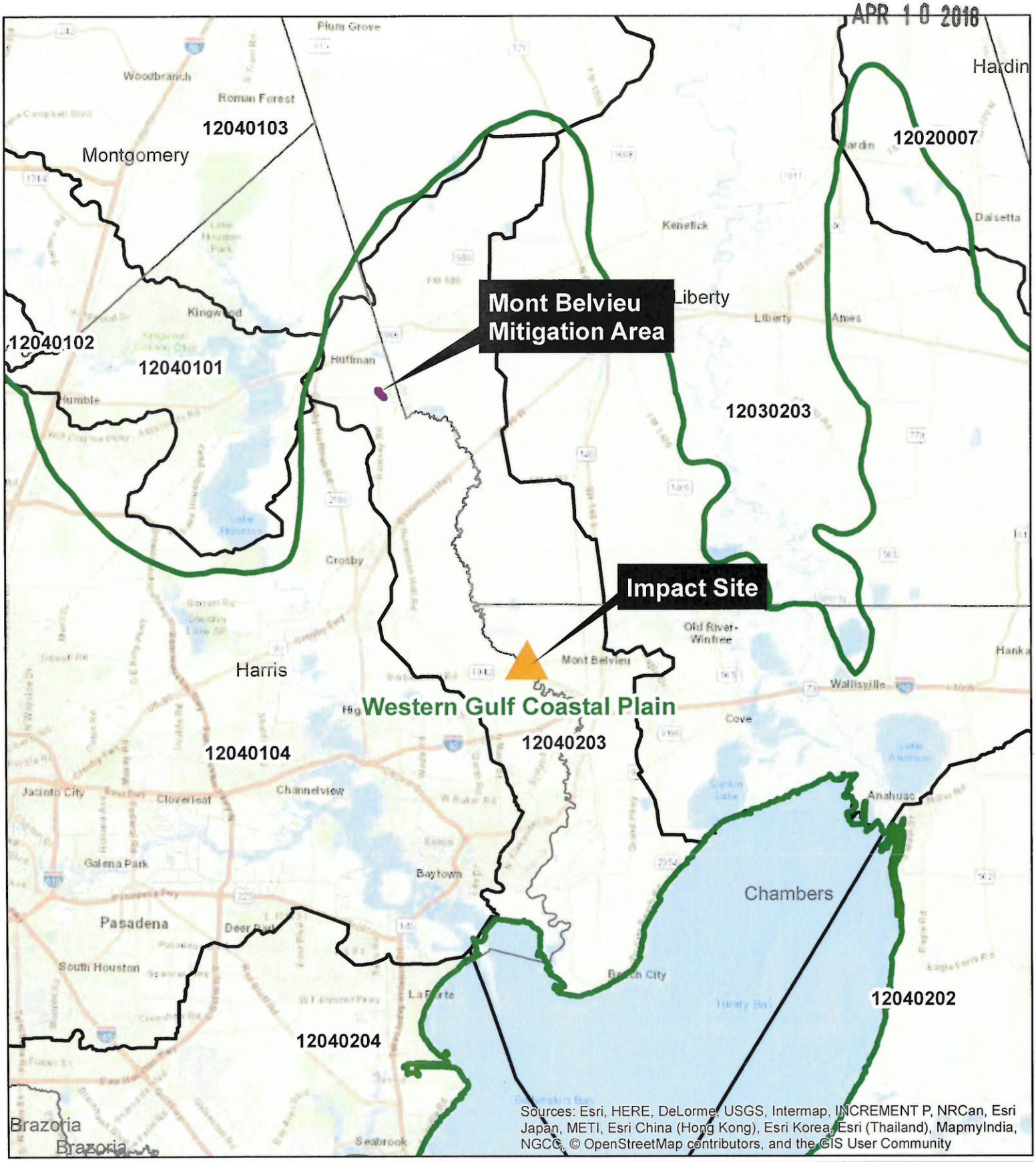
APR 10 2018



Legend

- PRMA (26.0 ac)
- EPA Level III Ecoregion
- 8-Digit HUC

Attachment 1
Mitigation Plan
Sheet 20 of 28.

0 2.5 5 10

Miles

Targa Brine Ponds 6, 7, 8, and 9
Targa Downstream LLC - SWG-2017-00254

VICINITY MAP

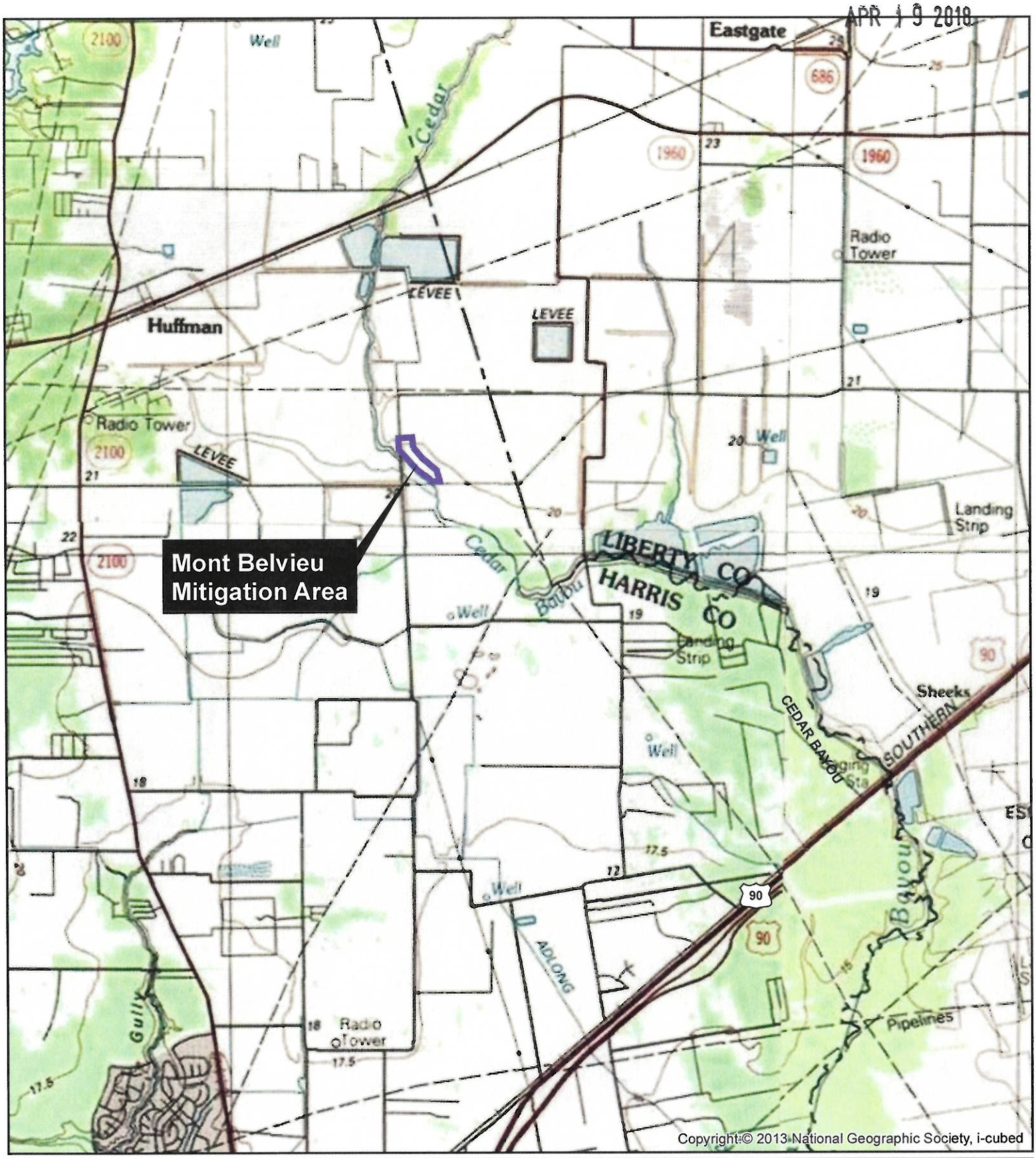
Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 3/26/2018	
Map No. : F1_Vicinity..mxd	

DELTA LAND SERVICES

FIGURE 1

APR 19 2018



Legend

PRMA (26.0 ac)

Attachment 1
Mitigation Plan
Sheet 21 of 28.

N

0 0.5 1 2

Miles

Targa Brine Ponds 6, 7, 8, and 9
Targa Downstream LLC - SWG-2017-00254

VICINITY MAP

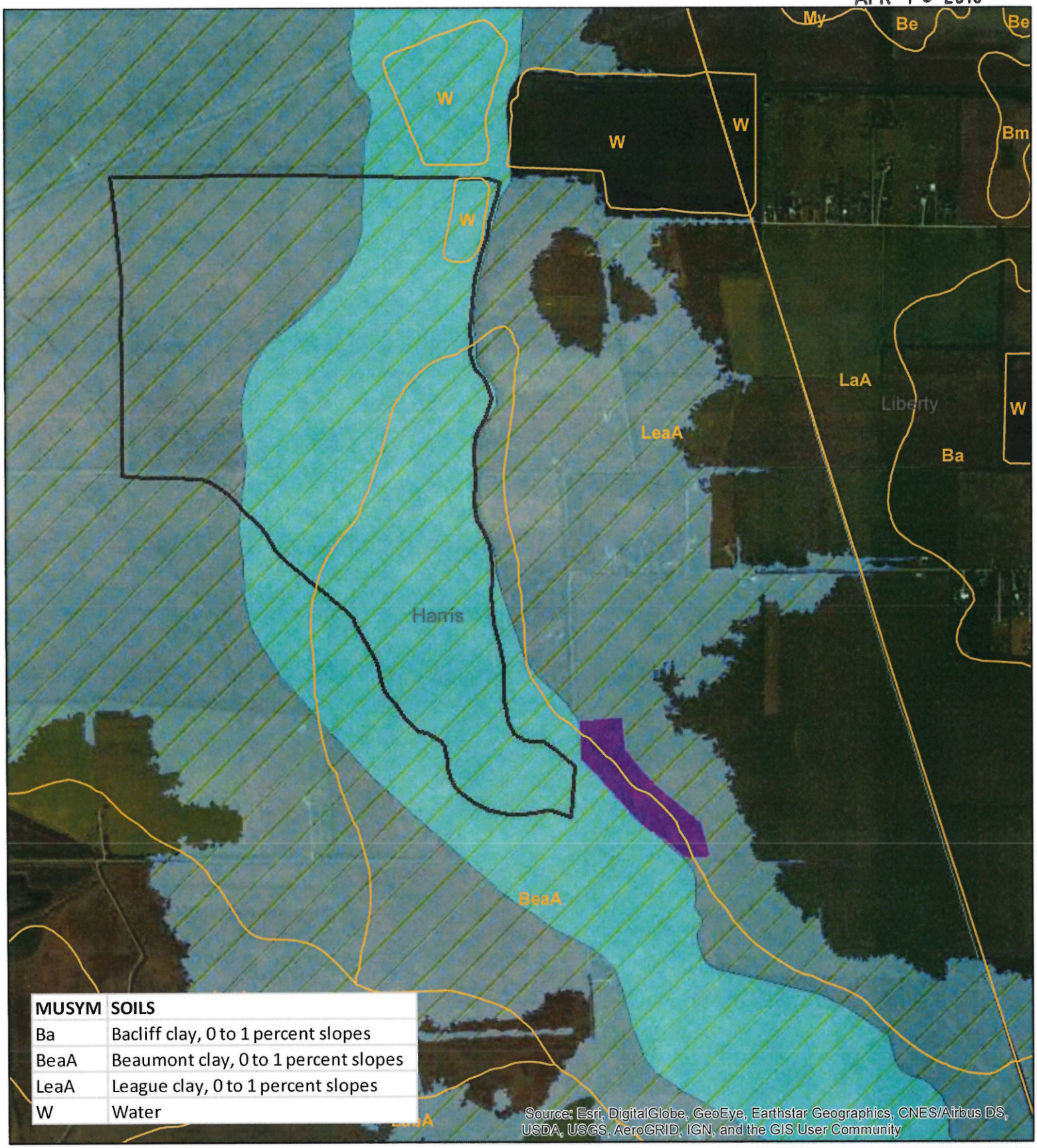
Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 3/26/2018	
Map No. : F1_Vicinity..mxd	

DELTA LAND SERVICES

FIGURE 1

APR 10 2018



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

- SURRGO SOILS
- PRMA (26.0 ac)
- Gin City Mitigation Bank
- FEMA 100-year Floodplain
- FEMA Floodway

Attachment 1
Mitigation Plan
Sheet 22 of 28.

0 800 1,600 3,200

Feet

Targa Brine Ponds 6, 7, 8, and 9
Targa Downstream LLC - SWG-2017-00254

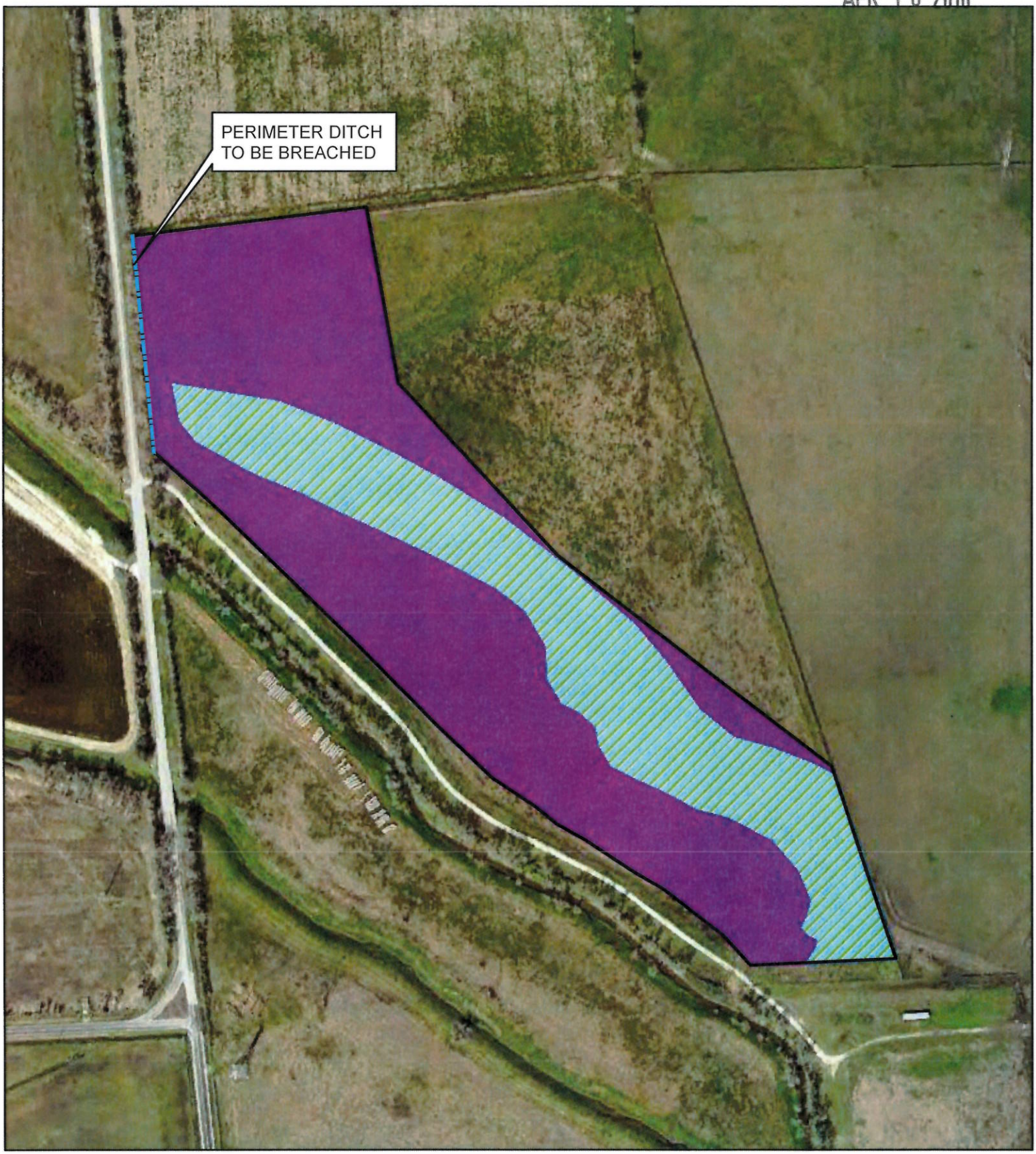
FLOODPLAIN AND SOILS MAP

Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 03/26/2018	
Map No. : F2_FloodplainSoils..m	

FIGURE 2

APR 10 2018



Legend

- PRMA (26.0 ac)
- Re-establishment (16.9 ac)
- Rehabilitation (9.1 ac)
- Ditch

Attachment 1
Mitigation Plan
Sheet 23 of 28.

0 150 300 600

Feet

Targa Brine Ponds 6, 7, 8, and 9
Targa Downstream LLC - SWG-2017-00254

MITIGATION FEATURES

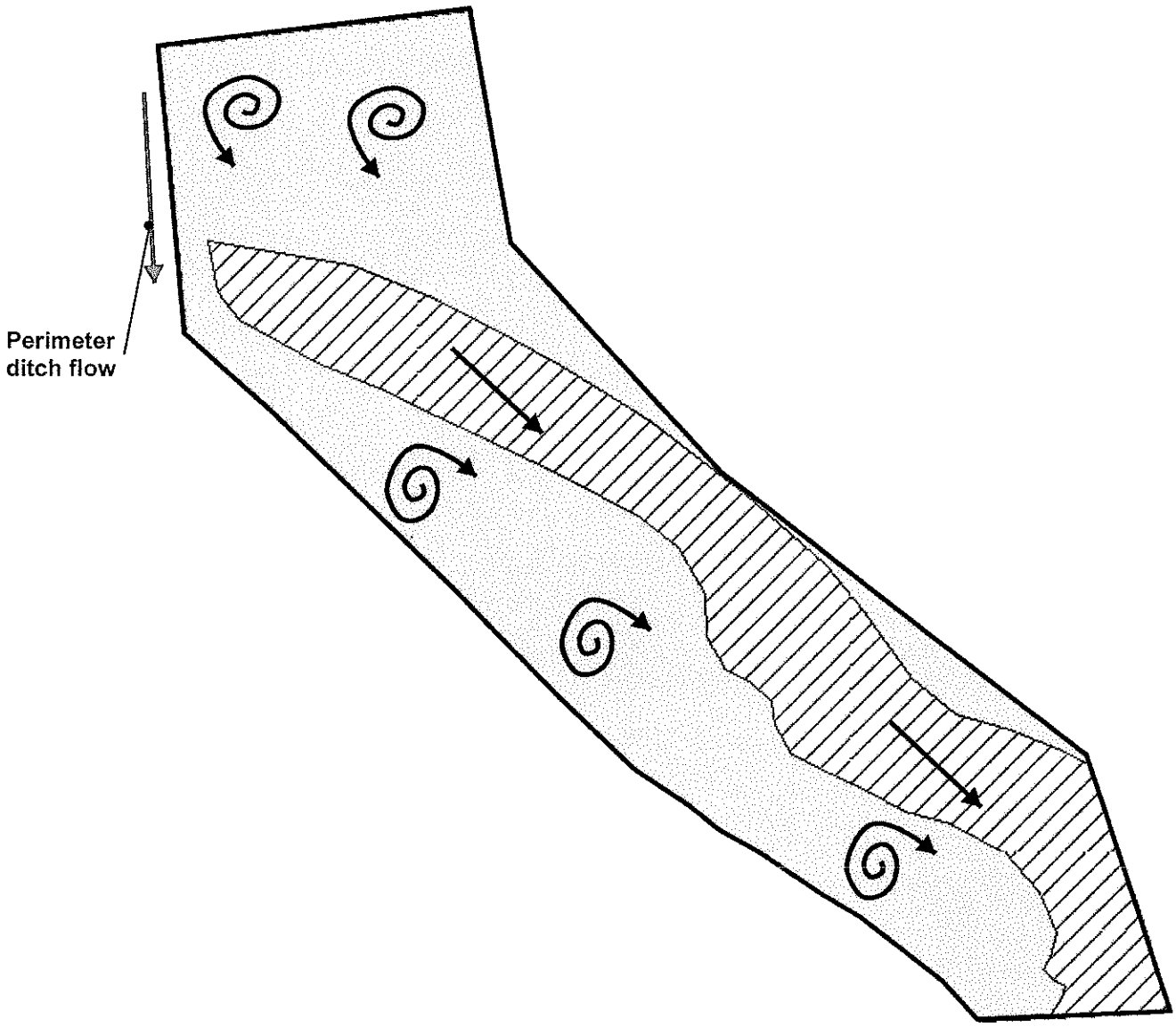
Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 4/9/2018	
Map No. : F3_MitFeatures..mxd	

DELTA LAND SERVICES

FIGURE 3

APR 1 0 2018



Legend

- PRMA (26.0 ac)
- Re-establishment (16.9 ac)
- Rehabilitation (9.1 ac)
- Water Flow

0 150 300 600

Feet

Attachment 1
Mitigation Plan
Sheet 24 of 28.

Targa Brine Ponds 6, 7, 8, and 9
Targa Downstream LLC - SWG-2017-00254

PRE CONSTRUCTION HYDROLOGY

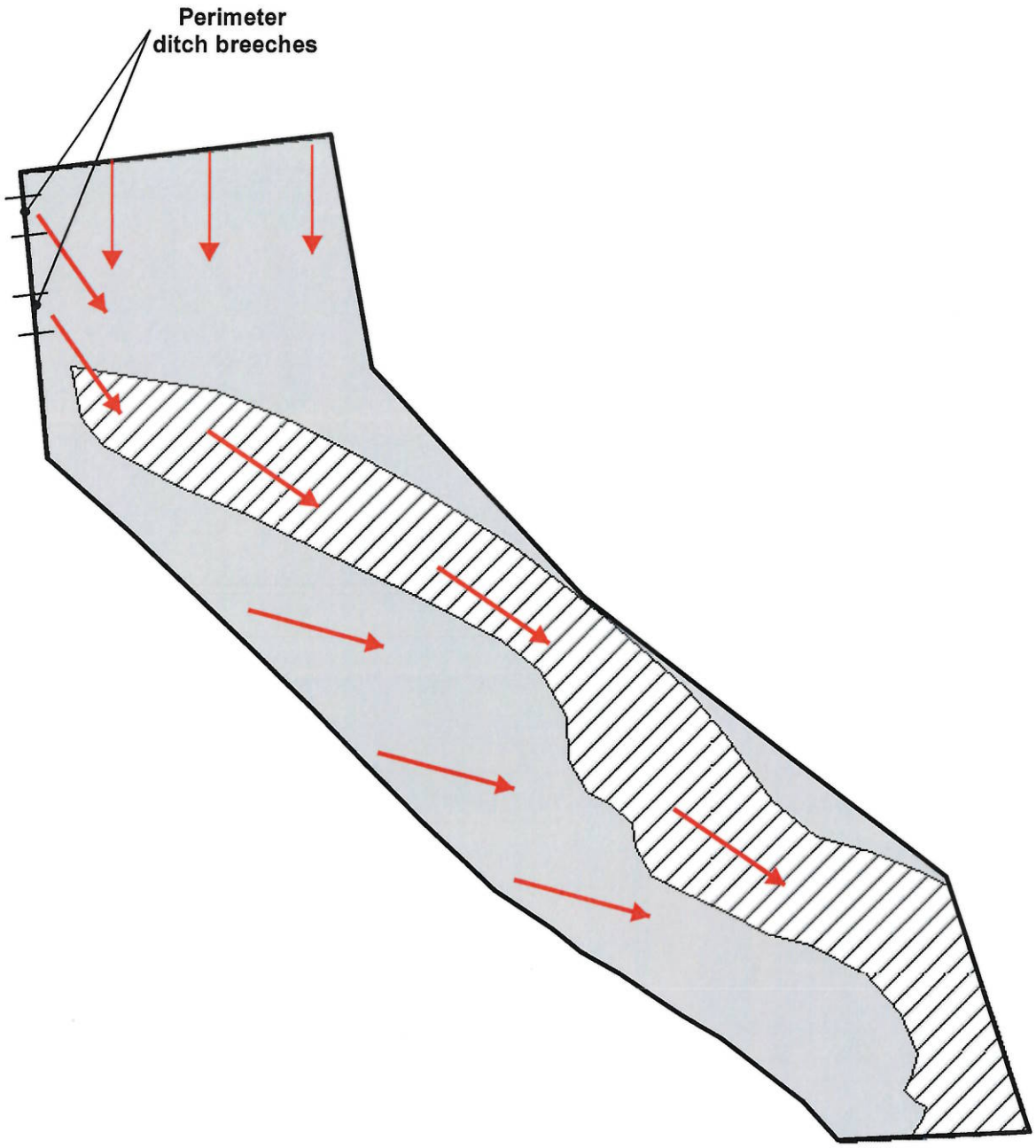
Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 3/26/2018	
Map No. : F3_MitFeatures..mxd	

DELTA LAND SERVICES

FIGURE 4

APR 10 2018



Legend

- PRMA (26.0 ac)
- Re-establishment (16.9 ac)
- Rehabilitation (9.1 ac)
- Proposed Water Flow

N

0 150 300 600

Feet

Attachment 1
Mitigation Plan
Sheet 25 of 28.

Targa Brine Ponds 6, 7, 8, and 9
Targa Downstream LLC - SWG-2017-00254

POST CONSTRUCTION HYDROLOGY

Harris County, TX

Created : TSC/ARCVIEW	
Approved: CB	
Date : 3/26/2018	
Map No. : F3_MitFeatures..mxd	

DELTA LAND SERVICES

FIGURE 5

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
pecan	*Carya illinoinensis*	FACU	<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
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 2014 National Wetland Plant List (Lichvar et al)

SWG-2017-00254
Attachment 1
Mitigation Plan
Sheet 26 of 28.

APR 10 2018

PFO Construction Costs
COE SWG-2017-00254

PFO Construction Costs

Item	Units	Unit Values	Price Per Unit	Percent	Cost
Hydrology Restoration	Cubic Yards	500	$ 0.50	100%	$ 250.00
PFO Invasive Species Control	Herbicide	520	-	100%	$ 520.00
PFO Invasive Species Mobilization	Application	200	-	100%	$ 200.00
PFO Site Prep (disking, ripping, and pre-emergent herbicide)	Acres	26.0	$ 80.00	100%	$ 2,080.00
Planting (Seedlings and Installation)	Seedlings	11336	$ 0.39	100%	$ 4,421.04
PFO Subtotal					**$ 7,471.04**
PFO Construction Cost with 5% Contingency					**$ 7,844.59**
Cost Per Credit Acre					**$ 301.72**

Total PFO Construction **$ 7,844.59**

Total PFO Construction and Establishment **$ 26,327.46**

Attachment 1
Mitigation Plan
Sheet 27 of 28.

APR 10 2018

Costs Analysis
COE SWG-2017-00254

Item	Units	Unit Values	Price Per Unit	Total Cost
Boundary Maintenance	Mile	1.0	$ 150.00	$ 156.00
PFO Invasive Species Control	Acre	26.0	$ 20.00	$ 520.00
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	26.0	$ 10.00	$ 260.00
PFO Planting Acreage	Acre	26.0	NA	NA
Site Prep per Acre (disking and ripping)	Acre	26.0	$ 40.00	$ 1,040.00
Site Prep per Acre (herbicides)	Acre	26.0	$ 40.00	$ 1,040.00
Seedling Planting Rate	Trees/Acre	436.0	NA	NA
Seedling Cost	Seedling	11336	$ 0.22	$ 2,493.92
Seedling Installation Rate	Seedling	11336	$ 0.17	$ 1,927.12
Seedling and Planting Cost	Seedling	11336	$ 0.39	$ 4,421.04
Hydrology Restoration (Earth Moving; blade/disk)	Cubic Yard	500	$ 0.50	$ 250.00
Site Prep and Pre-emergent Spray (PFO)	Acre	26.0	$ 100.00	$ 2,600.00
Total Credit Acreage	Acre	26.0	NA	NA
Conservation Easement Acreage	Acre	26.0	NA	NA
PFO Mitigation Acres	Acre	26.0	100%	
	Check acre	26.0		

Attachment 1
Mitigation Plan
Sheet 28 of 28.