FREEPORT LNG

FLARE ACCESS ROAD PROJECT

ATTACHMENT D

Preliminary Compensatory Mitigation Plan

Freeport LNG

Flare Access Road Project

Preliminary Compensatory Mitigation Plan

August 2019

Prepared by

ERM

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APPENDICES

ACRONYMS AND ABBREVIATIONS

COE	U.S. Army Corps of Engineers
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
ERDC	U.S. Army Engineer Research and Development Center
FERC	Federal Energy Regulatory Commission
Freeport LNG	Freeport LNG Development, L.P. and FLNG Liquefaction 4, LLC
Freeport LNG Development	Freeport LNG Development, L.P.
Freeport LNG Liquefaction	FLNG Liquefaction, LLC, FLNG Liquefaction 2, LLC, and FLNG Liquefaction 3, LLC
HGM	Hydrogeomorphic Approach for Assessing Wetland Functions
HUC	Hydrologic Unit Code
iHGM	Interim-HGM
Liquefaction Project	authorized LNG pretreatment, transport, liquefaction, and storage facilities
LNG	liquefied natural gas
PEM	Palustrine Emergent
Phase II Project	expansion of LNG import terminal
Phase II Modification Project	expansion of terminal send-out capacity
Pretreatment Facility	authorized natural gas pretreatment plant near Freeport, Texas
Project	Flare Access Road Project
Quintana Island Terminal	existing/authorized LNG terminal on Quintana Island near Freeport, Texas
RIBITS	Regulatory In-lieu Fee and Bank Information Tracking System
Train 4	fourth propane pre-cooled mixed refrigerant liquefaction unit at the Quintana Island Terminal
U.S.	United States

1.0 INTRODUCTION

On May 17, 2019, the Federal Energy Regulatory Commission ("FERC") issued an order in Docket No. CP17-470-000 ("FERC Order") authorizing Freeport LNG Development, L.P. and FLNG Liquefaction 4, LLC ("Freeport LNG") to site, construct, and operate the Train 4 Project (also referred to herein as "Project") which is an expansion of Freeport LNG Development, L.P., FLNG Liquefaction, LLC, FLNG Liquefaction 2, LLC, and FLNG Liquefaction 3, LLC's, existing Phase I, Phase II Modification, and Liquefaction Projects. Major Train 4 Project components include one liquefaction train and support facilities at the Quintana Island Terminal, one pretreatment unit and support facilities at the Pretreatment Facility, and a new 42-inch-diameter natural gas pipeline connecting the existing Stratton Ridge Meter Station, the Pretreatment Facility, and the Quintana Island Terminal.

On January 2, 2018, Freeport LNG Development, L.P. and FLNG Liquefaction 4, LLC (together, "Freeport LNG") submitted a request to the U.S. Army Corps of Engineers (COE) for authorization of the Train 4 Project natural gas liquefaction and export facilities as an amendment to Individual Permit No. SWG-2013-00147. The COE approved the amendment on April 30, 2019.

Subsequent to submitting applications and supplemental information to the COE and FERC, Freeport LNG determined the need for an additional 1.0 acre of land, adjacent to the existing Pretreatment Facility boundary, to provide construction access to the Train 4 Project area while maintaining separation between active areas of Liquefaction Project operation, notably the Pretreatment Facility ground flare. This area is referred to as the Flare Access Road Project ("Project"). Freeport LNG is requesting authorization for the Flare Access Road Project as an amendment to existing Individual Permit No. SWG-2013-00147, and as part of this amendment request has developed this Preliminary Compensatory Mitigation Plan.

The Flare Access Road Project will be constructed as an expansion of Freeport LNG's previously permitted Liquefaction Project and Train 4 Project. The Liquefaction Project is currently under construction. A Site Location Map is attached as Figure 1 of Appendix A. The Project scope includes construction of a 50-foot-wide access road on an additional 1.0 acre adjacent to the existing Pretreatment Facility (Figures 2 and 3 of Appendix A). The Project will be constructed by raising the Project footprint with fill by approximately 5 to 8 feet to match the existing Pretreatment Facility elevation. The Project will permanently impact approximately 0.4 acre of palustrine emergent ("PEM") wetlands.

During design, appropriate and practicable steps were taken by Freeport LNG to avoid and minimize adverse impacts to the aquatic ecosystems located within the Project Site. Compensatory mitigation for the unavoidable impacts to wetland resources is being considered by Freeport LNG pursuant to 40 CFR part 230 (i.e., Clean Water Act Section 404(b)(1) Guidelines). Figure 6 presents the boundary of the wetlands located within the Project Site and assessed as part of the conceptual compensatory mitigation plan (*see* Appendix A).

2.0 AVOIDANCE AND MINIMIZATION

Freeport LNG has incorporated a number of siting, construction, and operation practices to minimize the overall impact on PEM wetlands. The avoidance and minimization of impact to

aquatic resources is integral to facility design for Freeport LNG's proposed developments. The Flare Access Road Project was designed to minimize impacts by limiting the size and locating the road immediately adjacent to the existing facility.

The Project has been specifically located to maximize use of upland areas, in preference to wetland and waterbody areas. Figure 8 shows the three footprint configurations (Footprint Options 1, 2, and 3) that were considered at the outset of the design process (*see* Appendix A). Table 2.1-1 quantifies the wetland impacts for each Footprint Option.

Table 2.1-1

Flare Access Road Project
Wetland Impacts for Footprint Options

Wetland Name	Footprint 1 Impacts (acre)	Footprint 2 Impacts (acre)	Footprint 3 Impacts (acre)
we043e	0.31	0.76	0.77
we044e	0.03	<0.01	0.00
we045e	0.02	0.00	0.02
Total	**0.36**	**0.77**	**0.82**

During and following construction, Freeport LNG will ensure that impacts are appropriately addressed through adherence to permit conditions and implementation of the Project-specific Upland Erosion Control, Revegetation and Maintenance Plan, Wetland and Waterbody Construction and Mitigation Procedures, and Erosion and Sediment Control Plan. During construction of the Train 4 Project, activities relating to the Flare Access Road Project will be incorporated into the Train 4 Project's National Pollutant Discharge Elimination System permit and Stormwater Pollution Prevention Plan.

3.0 DETERMINATION OF CREDITS

The COE Galveston District utilizes the Hydrogeomorphic Approach for Assessing Wetland Functions ("HGM"). HGM, developed by scientists at the U.S. Army Engineer Research and Development Center ("ERDC"), is a procedure for measuring the potential of a wetland to perform critical functions. The HGM Regional Guidebooks were developed following specific protocols and subjected to a rigorous peer review process involving wetland experts. The procedure was designed to satisfy the need for better information on wetland functions within the programmatic requirements of the Rivers and Harbors Act Section 10 and Clean Water Act ("CWA") Section 404 regulatory program. The use of this methodology has increased the consistency and accuracy associated with determining wetland functional assessments (for impacts and/or mitigation), provided a standard for others to determine suitable mitigation, reduced the subjectivity associated with conducting a functional assessment, and ultimately resulted in decreased permit review time. Per COE guidance, the wetland impacts within the scope of the project have been assessed via Riverine Herbaceous/Shrub HGM Interim (iHGM) FCI worksheets found in Appendix B.

A total of three PEM wetlands, totaling 0.36 acre, will be converted to upland as a result of construction and operation of the Project. Table 3.1-1 describes the proposed impacts on these wetlands due to construction of the Project. Data sheets describing the existing conditions within

each emergent wetland are included in Appendix C, while photographs can be found in Appendix D.

Table 3.1-1

Flare Access Road Project
PEM Impacts Included in this Individual Permit Modification Submittal

8-Digit Hydraulic Unit Code (HUC) / Waters Name	Acres Impacted	Change in Temporary Storage and Detention of Water Scores		Change in Maintain Plant and Animal Communities Scores		Change in Removal and Sequestration of Elements and Compounds Scores	
		FCI	FCU	FCI	FCU	FCI	FCU
12040205 / we043e	0.02	0.57	0.01	0.50	0.01	0.41	0.01
12040205 / we044e	0.03	0.57	0.02	0.50	0.02	0.41	0.01
12040205 / we045e	0.31	0.57	0.18	0.50	0.16	0.41	0.13
Total	0.36	1.70	0.20	1.50	0.18	1.22	0.15

Note: Total acreages provided may differ from the sum of addends due to rounding.
FCI Functional Capacity Index Score
FCU Functional Capacity Unit Score

4.0 CONCEPTUAL COMPENSATORY MITIGATION PLAN

In 2008, the Environmental Protection Agency and COE issued revised regulations governing compensatory mitigation for authorized impacts to wetlands and other waters of the U.S. under CWA Section 404. These regulations, 33 CFR 332, also known as the "Mitigation Rule", are designed to improve the effectiveness of compensatory mitigation to replace lost aquatic resource functions and area, expand public participation in compensatory mitigation decision-making, and increase the efficiency and predictability of the mitigation project review process. Freeport LNG has evaluated the anticipated permanent impacts resulting from the Project, and in accordance with the Mitigation Rule, present the following conceptual compensatory mitigation plan to replace the loss of aquatic resource functions.

Freeport LNG proposes compensatory mitigation for the permanent impacts associated with project construction and operation through the purchase of mitigation credits from an approved mitigation bank, per the hierarchy outlined in 33 CFR 332.3b. A list of mitigation banks within the service area of the impacts described in Table 3.1-1, per the COE's Regulatory In-lieu Fee and Bank Information Tracking System ("RIBITS"), can be found below in Table 4.1-1. As demonstrated in Table 4.1-1, there are no in-kind (palustrine emergent) credits available in the service area of the proposed impacts. Freeport LNG proposes to purchase out-of-kind, in-service area credits. The proposed impacts are within the service area of two mitigation banks, Mill Creek and Danza del Rio. Both mitigation banks provide Riverine Forested credits. Freeport LNG proposes to mitigate for palustrine emergent impacts through the purchase of Riverine Forested credits from either of these banks.

Table 4.1-1

Flare Access Road Project
Mitigation Bank Inventory

Location of Bank (HUC)	Impacted HUC-8 Watershed #	Impacted HUC-8 Name	Mitigation Bank Name	Service Area	Available Credits (as of 7/16/19)	Credit Type
12070104	12040205	Austin-Oyster	Mill Creek	Primary	3.39	Riverine Forested iHGM Chemical
					0.01	Riverine Forested iHGM Biological
					1.63	Riverine Forested iHGM Physical
					225	SWG Stream Credits
12090401, 12090402	12040205	Austin-Oyster	Danza del Rio	Secondary	180	Riverine Forested iHGM Biological
					133.4	Riverine Forested iHGM Chemical
					124.7	Riverine Forested iHGM Physical

As shown in Table 3.1-1, Mill Creek is currently, per RIBITS, unable to provide the credits required due to a shortage of biological credits. The impacts are located in the secondary service for Danza del Rio, which has sufficient credits to mitigate any potential Project impacts. Freeport LNG proposes to purchase sufficient Riverine Forested Credits to mitigate impacts outlined in Table 3.1-1. Based on the PEM wetland impacts described in Table 3.1-1, the proposed mitigation credit summary below has been developed for impacts in the COE's Galveston District.

8-Digit HUC 12040205 – Austin-Oyster Watershed

- Palustrine emergent impacts in Brazoria County
- Temporary Storage and Detention of Water
    - Total change in FCI: 1.7
    - Total change in FCU: 0.20
- Maintain Plant and Animal Communities
    - Total change in FCI: 1.5
    - Total change in FCU: 0.18
- Removal and Sequestration of Elements and Compounds
    - Total change in FCI: 1.22
    - Total change in FCU: 0.15
- Proposed Mitigation
    - Danza del Rio Mitigation Bank

- Project impacts located within the bank's secondary service area (1.5x multiplier)
- 0.36 acres impacted
- FCU Credits Proposed (Transact by suite)
  - 0.3 Riverine Forested iHGM Biological
  - 0.3 Riverine Forested iHGM Chemical
  - 0.3 Riverine Forested iHGM Physical

To compensate for PEM wetland losses and long-term conversion, Freeport LNG is proposing the purchase of 0.3 FCUs of a Riverine Forested mitigation credit suite (i.e., chemical, biological, physical) from Danza del Rio Mitigation Bank.

The above preliminary compensatory mitigation plan is in accordance with COE guidelines. Freeport LNG would also like propose an alternative to the above mitigation plan. The project location lies just outside the service area of two mitigation banks within the same HUC-8 watershed as the project (Austin-Oyster, 12040205), Columbia Bottomland Conservation Mitigation Bank and Lower Brazos River. The two banks both provide in-kind credits (non-forested) that could potentially off-set the impacts of the project. Columbia Bottomland Conservation Mitigation Bank is currently sold out of non-forested credits, but Lower Brazos River has credits available. Freeport LNG could alternatively purchase in-kind credits in the same quantity (0.3 FCU) listed above from Lower Brazos River Mitigation Bank.

The mitigation scenarios outlined in this preliminary compensatory mitigation plan reflect the conditions and credit availability at the time of filing and Freeport LNG is open to alterations as new credits or banks become available during the permitting process.

5.0 REFERENCES

Clean Water Act, Section 404, 33 USC §1344

Rivers and Harbors Act of 1899, Section 10, 33 USC § 403

PRELIMINARY COMPENSATORY MITIGATION PLAN

APPENDIX A - FIGURES

Note: Figures included in the Preliminary Compensatory Mitigation Plan are identical to those included in Attachment C of the Amendment to Individual Permit No. SWG-2013-00147 dated August 9, 2019. Figures 4, 5, 7, 9, 10 and 11 are intentionally omitted from this attachment.

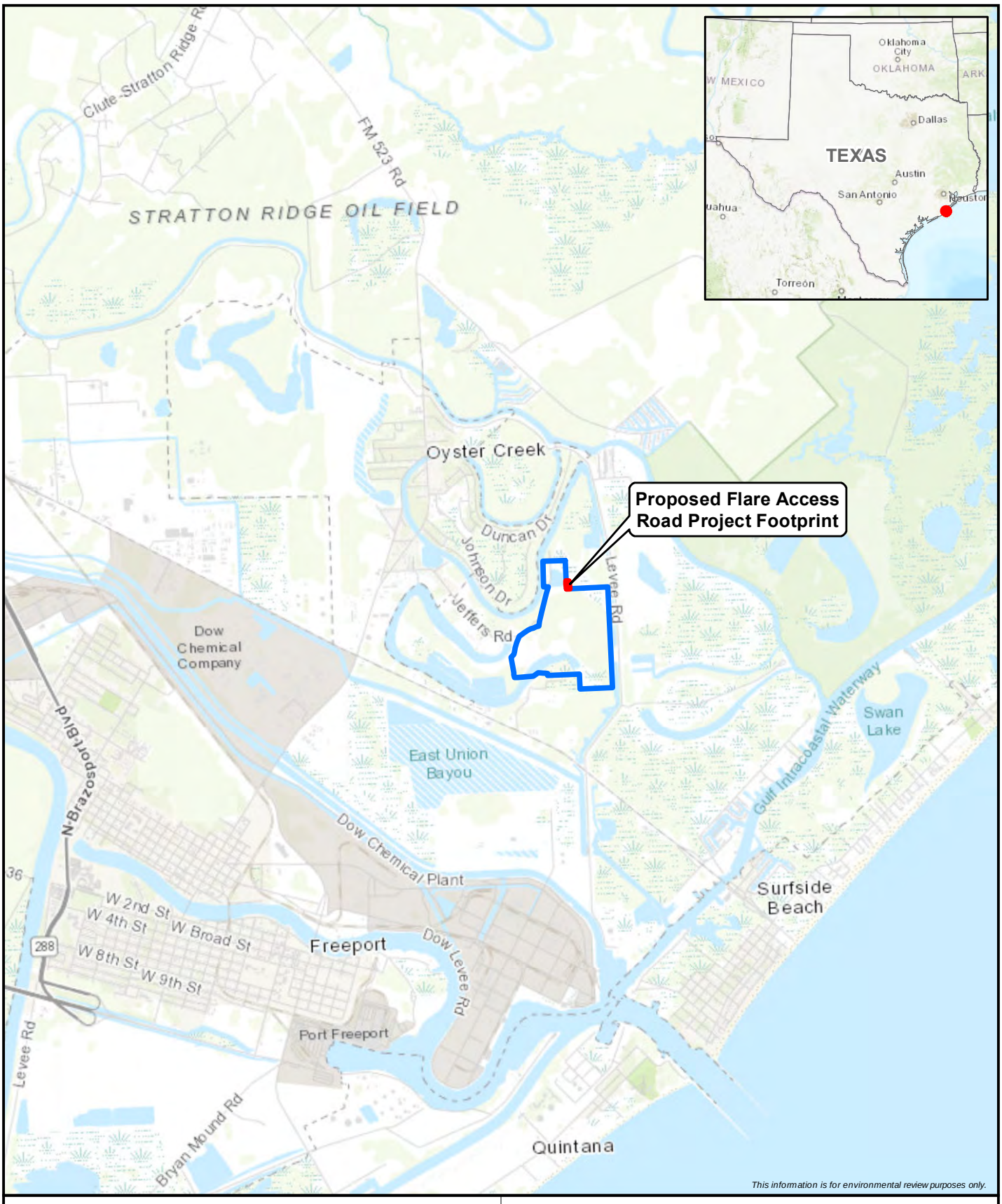

Figure 1
Regional Setting
Proposed Flare Access Road Project
Brazoria County, Texas

MPLS M:\Clients\D-F\FRE\Liquefaction_ArcGIS\2019\07\Flare_Access_Road_FRE_PTF_Flare_Fig1_Regional_Setting.mxd | REVISED: 08/01/2019 | SCALE: 1:63,360 DRAWN BY: 0239

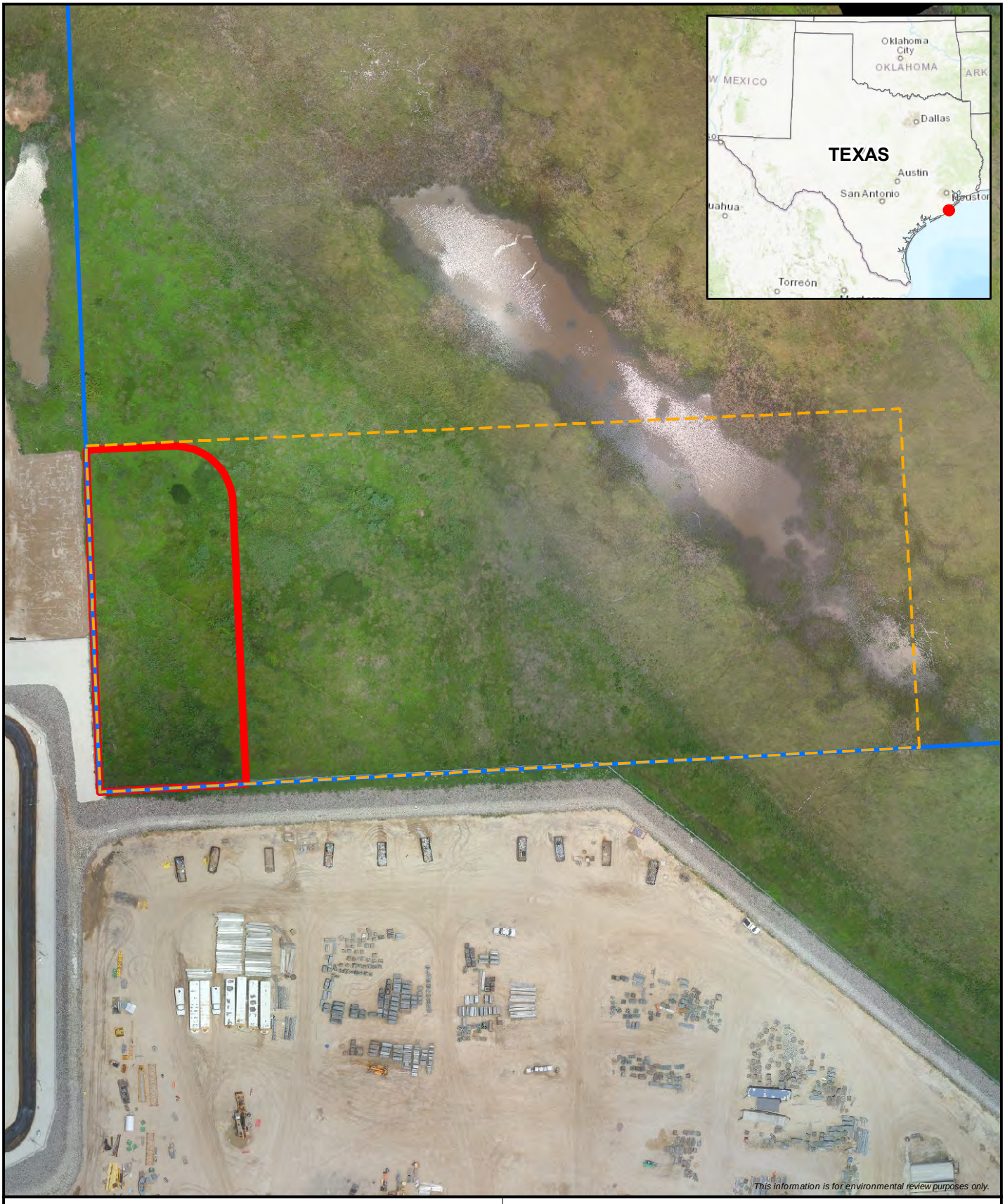

Figure 2
Survey Area
Proposed Flare Access Road Project
Brazoria County, Texas

MPLS M:\Clients\D-F\FRE\Liquefaction_ArcGIS\2019\07\Flare_Access_Road_FRE_PTF_Flare_Fig2_Survey_Area.mxd | REVISED: 08/01/2019 | SCALE: 1:1,500 DRAWN BY: 0239

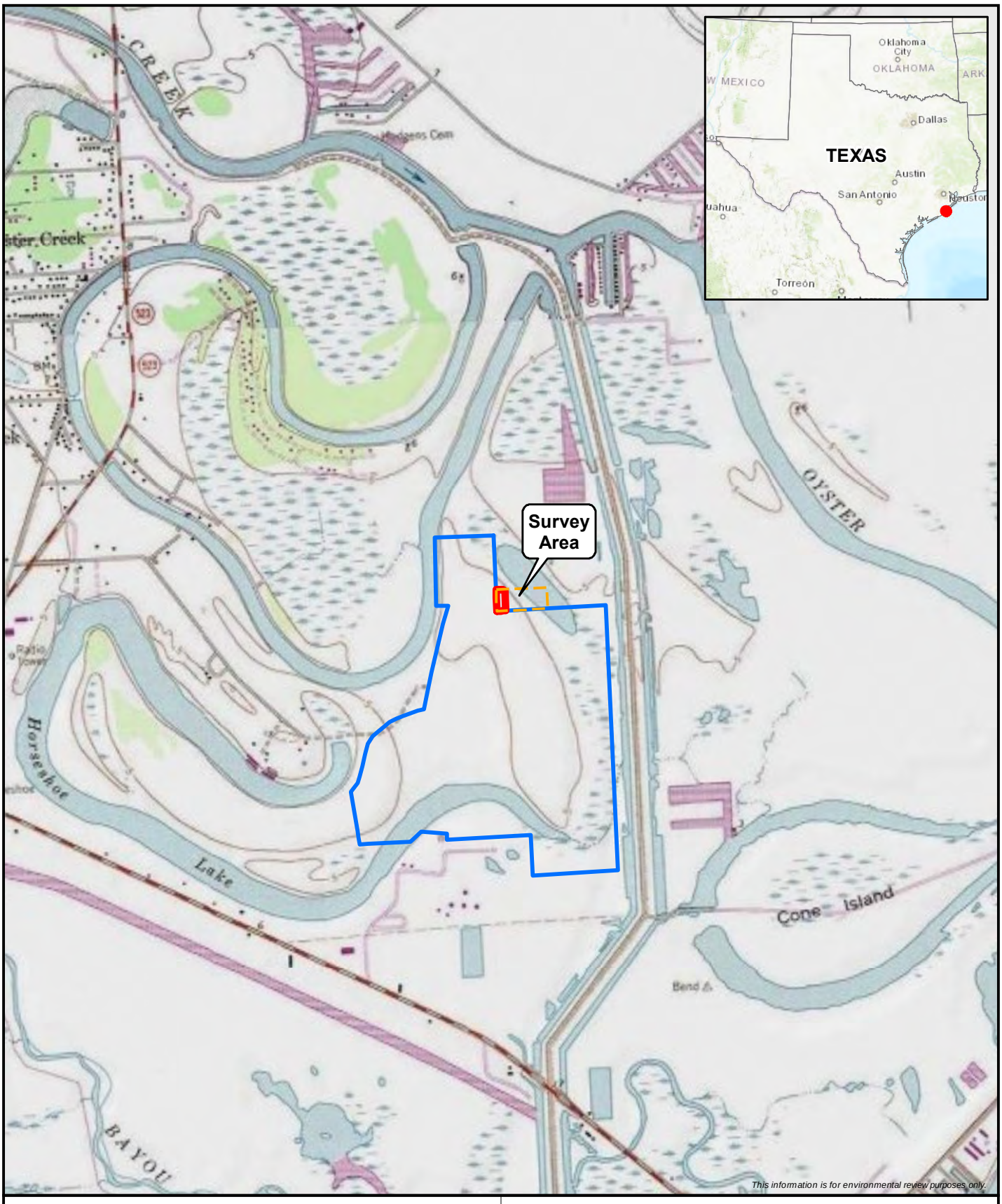

Figure 3
Survey Area - Topographic Map
Proposed Flare Access Road Project
Brazoria County, Texas

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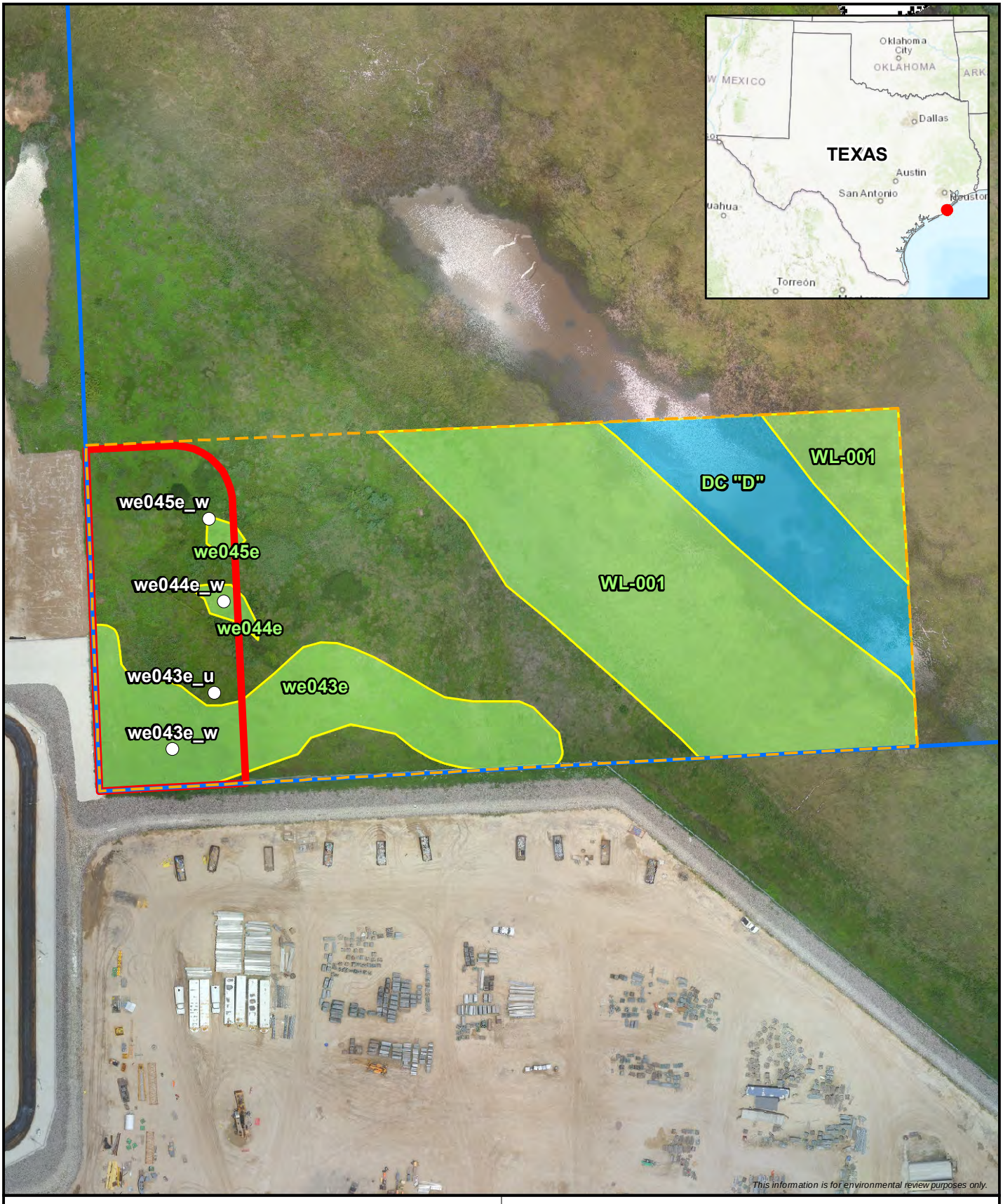
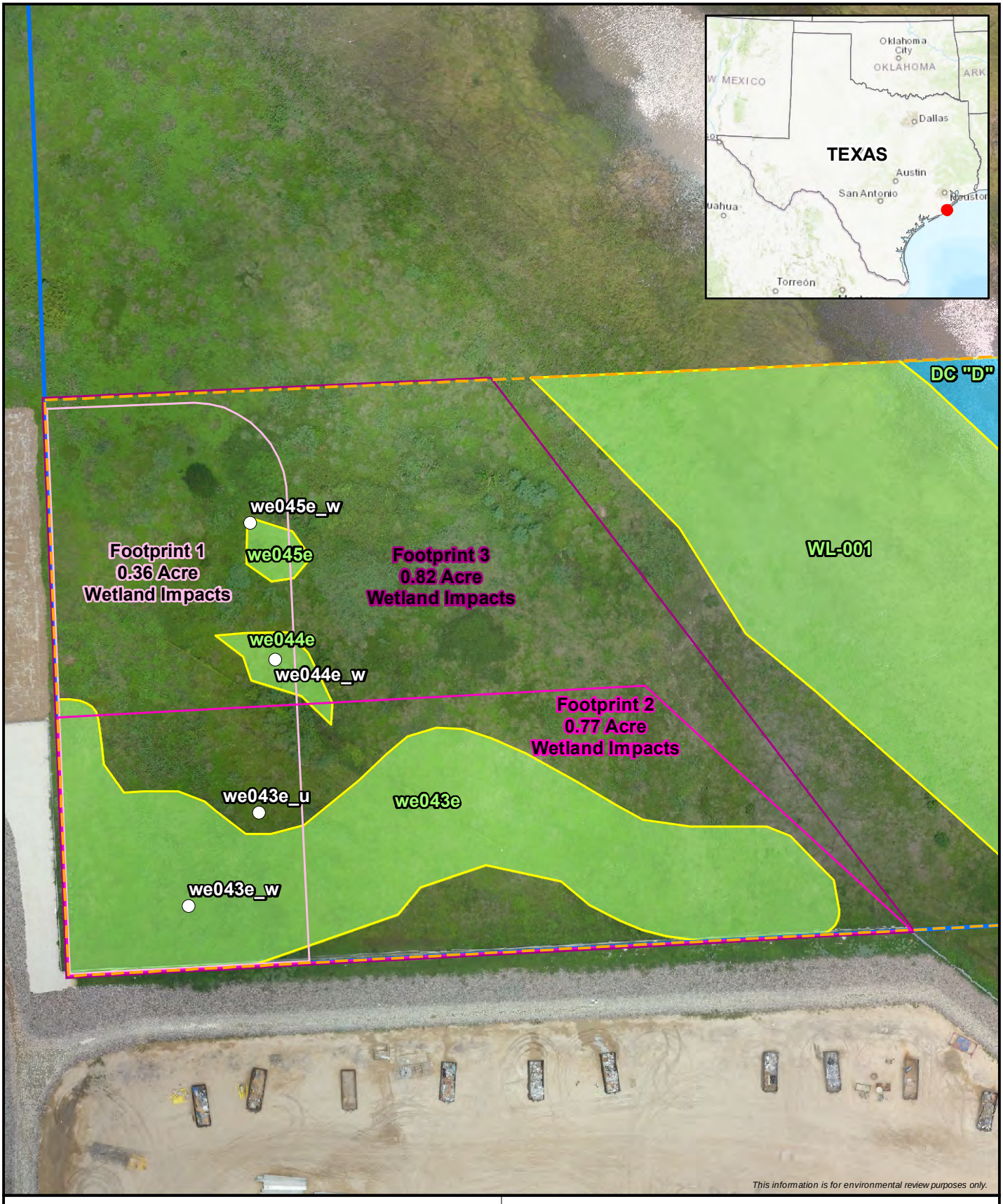


Proposed Flare Access Road Project Footprint
Pretreatment Facility Boundary
Survey Area
Delineated Waterbody
Delineated Wetland
Wetland Data Point
N
1:1,500
0 125 250 Feet

Figure 6
Surveyed Wetlands and Waterbodies
Proposed Flare Access Road Project
Brazoria County, Texas

MPLS M:\Clients\D-F\FRE\Liquefaction_ArcGIS\2019\07\Flare_Access_Road_FRE_PTF_Flare_Fig6_Surveyed_WW.mxd | REVISED: 08/01/2019 | SCALE: 1:1,500 DRAWN BY: 0239



Footprint 1 - 0.96 Acre
Footprint 2 - 1.32 Acres
Footprint 3 - 2.64 Acres
Pretreatment Facility Boundary
Survey Area
Delineated Waterbody
Delineated Wetland
Wetland Data Point

1:900 0 75 150 Feet

Figure 8
Alternative Flare Access Road Footprints
Proposed Flare Access Road Project
Brazoria County, Texas

MPLS M:\Clients\D-F\FRE\Liquefaction_ArcGIS\2019\07\Flare_Access_Road_FRE_PTF_Flare_Fig8_Footprints.mxd | REVISED: 08/08/2019 | SCALE: 1:900 DRAWN BY: 0239

PRELIMINARY COMPENSATORY MITIGATION PLAN

APPENDIX B - iHGM WORKSHEETS

Riverine Herbaceous/Shrub HGM Interim (FCI formulas)

Temporary Storage & Detention of Storage Water:

$$[\{V_{dur} \times V_{freq}\}^{1/2} X \{V_{topo} + \{V_{herb} + V_{mid/2}\}/2] 1/2$$

Maintain Plant and Animal Community:

$$\{V_{mid} + V_{herb} + V_{connect}\}/3$$

Removal & Sequestrian of Elements & Compounds:

$$[[V_{wood} + V_{freq} + V_{dur} + [\{V_{topo} + V_{herb} + V_{mid}\}/3] + [\{V_{detritus} + V_{redox} + V_{sorpt}\}/3]]/5$$

V_{dur}
V_{freq}
V_{topo}
V_{wood}
V_{mid}
V_{herb}
$V_{connect}$
$V_{detritus}$
V_{redox}
V_{sorpt}

* The Riverine model is designed to be used to produce an assessment of the potential function of wetlands that share a surface hydrologic connection (at least periodically during anticipated high flows) with a riverine system {i.e. it is limited to wetlands located in the floodplain and/or floodway}. This model is to be used for a rapid non-controversial estimate of the potential impacts to herbaceous riparian wetlands and to see if the proposed mitigation will adequately address the wetland functions that are being impacted.

Riverine Herbaceous/Shrub HGM Interim

The techniques used to determine which functional capacity index (FCI) will be used for each variable rare typically based on standard techniques described in detail in the 1987 Corps Wetland Delineation Manual, the NRCS 3rd Edition to the National Food Security Act Manual (NFSAM) and/or the "A Regional Guidebook for Application of Hydrogeomorphic Assessments to Riverine Low Gradient Wetlands (Ainslie et al. 1997). These sources will hereafter be referred to as the 87 WDM, NFSAM, and the Kentucky Riverine Guidebook, respectively.

Documentation should be made for each variable as to which method, indicator, plot size was used for each variable. The number of sample plots is related to the variability of the site. Significantly different timber age classes or species types should be sampled separately. One of two sample plots might be sufficiently in a small uniform site, whereas, numerous sample plots would be required for a large diverse site. The following is a general definition and guidance on the methodology for each variable.

V_{dur} **Duration of Flooding:** Indicators as described in the Wetland Hydrology Section of the 87 WDM (paragraphs 46-49) will be utilized to estimate duration of flooding. NOTE: unlike the criteria for hydrology for wetland delineation, growing season is not a factor in the variable. Those indicators associated with saturation should not be used.

V_{freq} **Frequency of Flooding:** Indicators as described in the Wetland Hydrology Section of the 87 WDM (paragraphs 46-49) will be utilized to estimate frequency of flooding. Utilization of the county soil survey is a particularly good tool. NOTE: unlike the criteria for hydrology for wetland delineation, growing season is not a factor in the variable.

V_{topo} **Topography:** To determine percent for these criteria, visual estimate will be conducted. Those areas with significant topographic features will be shown on a reference map, briefly described (i.e ridge/slough, mounds, undulations, channels/burn, etc.) and measured to determine acreage. Percent of site containing topographic features can then be determined.

V_{wood} **Woody vegetation:** Percentage of the WAA that is covered by woody vegetation will be determined by the use of recent aerial photography. Field verification is needed to ensure land use changes have not occurred. Size and density of woody vegetation impedes water flow. For example; a few large trees in a pasture would NOT constitute "covered with woody vegetations" nor would 1 year old seedlings. It should also be noted that an area clear cut with stumps, sprouts and shrubs removed would NOT constituted "woody vegetation" and the functions should be assessed using a herbaceous model.

V_{mid} **Midstory (Shrubs/saplings/woody vines):** The midstory layer is the layer of botanical specie located between the herbaceous and forest/tree canopy. This would included shrubs, saplings, smaller trees, small trees, and large woody vines. A measure is taken at each plot and/or a visual estimate is performed at each sample location(s).

$V_{herb:}$ **: Herbeceous layer:** Herbaceous layers are made at each data location/plot as is described it in the 87 WDM. It is recommended that 2-5 sub plots be taken at each location to account for vegetative variability.

$V_{detritus:}$ **Detritus:** This variable is a measure of the percentage of areas with detritus at the soil surface. Plowed areas or areas "washed" by high velocity flood water should not be considered as areas having detritus. Determination of an A (with organic) or O horizon should be determined for the entire site by on site field information. For this variable, the A (with organic) must have a Munsell value of 4 or less. Refer to the Kentucky Riverine Model for additional details regarding this variable.

$V_{redox:}$ **Redoximorphic process:** This variable is an indicator of periodic aerobic and anaerobic process within the top 10-12 inches of the soil surface. Redox features should be document for each sample plot/location and any other soil investigation conducted on the site. At least 50%of the must meet this criteria to be a 1 in the sub index.

$V_{sorpt:}$ **Sorptive Soil Properties:** This variable is a general indicator of the potential that the soil has in regards to it's absorptive properties. This information can be obtained by the use of the county soil survey in conjunction with the field data.

$V_{connect:}$ **Connectivity to other habitat types:** This variable concentration on the geo-location of the WAA in relationship to other habitat type within 600 feet from the perimeter of the WAA.

Variables for HGM (Interim) Herbaceous/Shrub Riverine

V_{dur}: The % of the WAA that is flooded and/or ponded due to the hydrology (i.e. flooding overbank flow) of the nearby waterway

Criteria	Variable Sub index
In an average year at 80% of the WAA either floods and/or ponds for at least 14 consecutive days	1.00
In an average year at 80% of the WAA either floods and/or ponds for at least 7 consecutive days	0.75
In an average year at 50-79% of the WAA either floods and/or ponds for at least 7 consecutive days	0.50
In an average year at 25-50% of the WAA either floods and/or ponds for at lease 7 consecutive days	0.25
In an average year all or portions of the WAA either floods and/or ponds for at least 1-7 consecutive days	0.10
The area is NOT subject to flooding	0.00

V_{freq}: The frequency that the WAA is flooded and/or ponded by nearby waterway .

Criteria	Variable Sub index
Floods or pond annually 5 out of 5 years (floodway)	1.00
Floods or ponds 3 or 4 out of 5 years (elevation data reveals in floodway and mapped w/n 100 yr floodplain)	0.75
Floods or ponds 2 out of 5 years (100- year floodplain)	0.50
Floods or ponds less than 2 out of 5 years (100-500 yr floodplain grey w/out elevations)	0.25
The area is not subject to flooding or ponding (500 yr floodplain)	0.00

V_{topo}: The roughness associated with the WAA

Criteria	Variable Sub Index
Greater than 30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features	1.00
15 - 30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features	0.70
Less than 15% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features	0.40
Smooth, flat, or very gentle undulating with little or no topographic features	0.10

V_{wood}: Percentage of the WAA that is covered by woody vegetation

Criteria	Variable Sun Index
Greater than 90% of the WAA is covered with woody vegetation	1.00
67 to 90 % of the WAA is covered with woody vegetation	0.75
34 to 66% of the WAA is covered with woody vegetation	0.50
11 to 33% of the WAA is covered with woody vegetation	0.25
0-10% if the WAA is covered with woody vegetation	0.10

V_{mid}: The average/mean coverage of the midstory (shrub/sapling) layer in the WAA

Criteria	Variable Sub Index
Midstory coverage of the WAA is more than 75%	1.00
Midstory coverage of the WAA is between 50-75 %	0.75
Midstory coverage of the WAA is between 25-50%	0.50
Midstory coverage of the WAA is between 1-25%	0.25
Midstory coverage of the WAA is equal to or less than1%	0.10

V_{herb}: The average/mean coverage of the WAA by the herbaceous layer

Criteria	Variable Sub Index
Herbaceous cover in the WAA averages greater than 75%	1.00
Herbaceous cover in the WAA averages between 50-75%	0.75
Herbaceous cover in the WAA averages between 25-50%	0.50
Herbaceous cover in the WAA average is between 1-25%	0.25
Herbaceous cover in the WAA is equal to or less than 1% (barren soil or all shrub)	0.10

$V_{connect}$: the number of habitat types within a 600' of the parameter of the WAA

(Habitat to be counted has to be at a minimum 5% of the size of the WAA)

Habitat Types:

Forested	Shrub/Sapling
Herbaceous/Prairie/Abandoned Ag field	Active Agricultural Field
Open water	Wetland
Mudflat	Lawn

Criteria:	Variable Sub Index
Wetland plus four habitats and/or surrounded by forested	1.00
Wetland plus two or more habitat type (other than forested) OR three or more habitat types	0.75
Wetland plus one other habitat types or two other habitat types	0.50
One other habitat types other than urban habitat	0.25
Surround by urban (homes, lawn, concrete, etc.)	0.10

$V_{detritus}$: The amount of the detritus on the WAA

(A horizon has to have a value of 4 or less)

Criteria	Variable Sub Index
Greater than 85% of the area possesses an O or A horizon	1.00
From 11-84% of the area possesses an O or A horizon	0.50
Less than 10% of the area possesses an O or A horizon	0.30
Site is plowed	0.10

V_{redox}: The amount of the WAA that exhibits redox features an indication of the chemical exchange

Criteria	Variable Sub Index
Redox concentrations represent at least 20% of the pedon within the top 4 inches of the soil surface, or feature masked due to parent material but conditions are conducive to redoximorphic processes. (many mottles)	1.0
Redox features less than 20%	0.1

V_{sorpt}: The absorptive properties of the soils in the WAA

Criteria	Variable Sub Index
The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silty clay loams) or soils with high organic (2/1, 2/2, or 3/1)	1.00
WAA is dominated by loamy (silt loams, very fine sandy loams, loam) or non-montmorillonitic clays	0.50
The WAA is dominated by sandy soils (sands, loamy fine sands, loamy sands)	0.10

Riverine Herb/Shrub HGM (Interim) Worksheet

WAA # we043e

Variable	Subindex
V_{dur}	0.5
V_{freq}	0.25
V_{topo}	0.7
V_{wood}	0.1
V_{mid}	0.25
V_{herb}	1
$V_{detritus}$	0.5
V_{redox}	0.1
V_{sorpt}	1
$V_{connect}$	0.25

WAA # we044e

Variable	Subindex
V_{dur}	0.5
V_{freq}	0.25
V_{topo}	0.7
V_{wood}	0.1
V_{mid}	0.25
V_{herb}	1
$V_{detritus}$	0.5
V_{redox}	0.1
V_{sorpt}	1
$V_{connect}$	0.25

WAA # we045e

Variable	Subindex
V_{dur}	0.5
V_{freq}	0.25
V_{topo}	0.7
V_{wood}	0.1
V_{mid}	0.25
V_{herb}	1
$V_{detritus}$	0.5
V_{redox}	0.1
V_{sorpt}	1
$V_{connect}$	0.25

Riverine Herb/Shrub (Interim HGM) Worksheet
Functional Capacity Index (FCI)

Temporary Storage & Dentention of Storage Water:

$[\{V_{dur} \times V_{freq}\}^{1/2} \times \{V_{topo} + \{V_{herb} + V_{mid/2}\}/2]1/2$

[{0.5 x 0.25} ½ x {0.7 + {1 + 0.25/2}/2]1/2 = FCI

[{0 x 0} ½ x {0 + {0 +0/2}/2]1/2 = FCI

Maintain Plant and Animal Communities:

$\{V_{mid} + V_{herb} + V_{connect}\}/3$

{0.25 + 1 + 0.25}/3 = FCI

{0 + 0 + 0}/3 = FCI

Removal & Sequestrian of Elements & Compounds:

$[[V_{wood} + V_{freq} + V_{dur} + [\{V_{topo} + V_{herb} + V_{mid}\}/3] + [\{V_{detritus} + V_{redox} + V_{sorpt}\}/3]]/5$

[[0.1 + 0.25 + 0.5 +[{0.7 +1 + 0.25}/3] + [{0.5 + 0.1 + 1}/3]]/5 = FCI

[[0+ 0 + 0 +[{0 + 0 + 0}/3] + [{0 + 0 + 0}/3]]/5 = FCI

Functional Capacity Units (FCU); FCI x wetland acres per WAA: we043e

WAA #	Pre-project FCUs	Post Project FCUs
Temp Storage of Water	0.01	0
Maintain Plant & Animal	0.01	0
Removal of Elements	0.01	0

Riverine Herb/Shrub (Interim HGM) Worksheet
Functional Capacity Index (FCI)

Temporary Storage & Dentention of Storage Water:

$[\{V_{dur} \times V_{freq}\}^{1/2} \times \{V_{topo} + \{V_{herb} + V_{mid/2}\}/2]1/2$

[{0.5 x 0.25} ½ x {0.7 + {1 + 0.25/2}/2]1/2 = FCI

[{0 x 0} ½ x {0 + {0 +0/2}/2]1/2 = FCI

Maintain Plant and Animal Communities:

$\{V_{mid} + V_{herb} + V_{connect}\}/3$

{0.25 + 1 + 0.25}/3 = FCI

{0 + 0 + 0}/3 = FCI

Removal & Sequestrian of Elements & Compounds:

$[[V_{wood} + V_{freq} + V_{dur} + [\{V_{topo} + V_{herb} + V_{mid}\}/3] + [\{V_{detritus} + V_{redox} + V_{sorpt}\}/3]]/5$

[[0.1 + 0.25 + 0.5 +[{0.7 +1 + 0.25}/3] + [{0.5 + 0.1 + 1}/3]]/5 = FCI

[[0+ 0 + 0 +[{0 + 0 + 0}/3] + [{0 + 0 + 0}/3]]/5 = FCI

Functional Capacity Units (FCU); FCI x wetland acres per WAA: we044e

WAA #	Pre-project FCUs	Post Project FCUs
Temp Storage of Water	0.02	0
Maintain Plant & Animal	0.02	0
Removal of Elements	0.01	0

Riverine Herb/Shrub (Interim HGM) Worksheet
Functional Capacity Index (FCI)

Temporary Storage & Dentention of Storage Water:

$[\{V_{dur} \times V_{freq}\}^{1/2} \times \{V_{topo} + \{V_{herb} + V_{mid/2}\}/2]1/2$

[{0.5 x 0.25} ½ x {0.7 + {1 + 0.25/2}/2]1/2 = FCI

[{0 x 0} ½ x {0 + {0 +0/2}/2]1/2 = FCI

Maintain Plant and Animal Communities:

$\{V_{mid} + V_{herb} + V_{connect}\}/3$

{0.25 + 1 + 0.25}/3 = FCI

{0 + 0 + 0}/3 = FCI

Removal & Sequestrian of Elements & Compounds:

$[[V_{wood} + V_{freq} + V_{dur} + [\{V_{topo} + V_{herb} + V_{mid}\}/3] + [\{V_{detritus} + V_{redox} + V_{sorpt}\}/3]]/5$

[[0.1 + 0.25 + 0.5 +[{0.7 +1 + 0.25}/3] + [{0.5 + 0.1 + 1}/3]]/5 = FCI

[[0+ 0 + 0 +[{0 + 0 + 0}/3] + [{0 + 0 + 0}/3]]/5 = FCI

Functional Capacity Units (FCU); FCI x wetland acres per WAA: we045e

WAA #	Pre-project FCUs	Post Project FCUs
Temp Storage of Water	0.18	0
Maintain Plant & Animal	0.16	0
Removal of Elements	0.13	0

PRELIMINARY COMPENSATORY MITIGATION PLAN

APPENDIX C - DATA SHEETS

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Train 4, Liquefaction Project City/County: Brazoria Sampling Date: 10/22/2018

Applicant/Owner: Freeport LNG State: Texas Sampling Point: we043e_w

Investigator(s): L. Barry, C. Howell Section, Township, Range:

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 0-1%

Subregion (LRR or MLRA): T Lat: 28.98844069 Long: -95.31124413 Datum: WGS 1984

Soil Map Unit Name: 39 - Surfside clay NWI classification: PEM1A

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:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 two 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): 2

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 5

Wetland Hydrology Present? **Yes ✔** **No ____**

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: we043e_w

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size:)			
1. *Spartina alterniflora*	45	Yes	OBL
2. *Eleocharis acicularis*	35	Yes	OBL
3. *Setaria parviflora*	10	No	FACW
4. *Phyla nodiflora*	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		130 (B)

Prevalence Index = B/A = 1.3

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.

Definitions of Five 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.

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).

SOIL

Sampling Point: we043e_w

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 %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	90	10YR	10	D	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ 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 Mucky 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:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Train 4 Project, Liquefaction Project City/County: Brazoria Sampling Date: 11/19/2018

Applicant/Owner: Freeport LNG State: Texas Sampling Point: we043e_u

Investigator(s): B. Savant, L. Barry Section, Township, Range:

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): microtopography Slope (%): 0-1%

Subregion (LRR or MLRA): T Lat: 28.98857985 Long: -95.31111691 Datum: WGS 1984

Soil Map Unit Name: 39 - Surfside clay NWI classification: PEM1A

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:
Surface squishy beneath footing, though no surface water present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 two 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:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: we043e_u

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Shrub Stratum (Plot size:)			
1. *Prosopis glandulosa*	5	Yes	UPL
2. *Vachellia farnesiana*	5	No	
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size:)			
1. *Spartina alterniflora*	40	Yes	OBL
2. *Iva annua*	20	Yes	FAC
3. *Setaria parviflora*	10	No	FACW
4. *Rubus trivialis*	10	No	FACU
5. *Boltonia asteroides*	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17		
Woody Vine Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

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: 66.66666666 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	15	x 2 =	30
FAC species	20	x 3 =	60
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	90 (A)		195 (B)

Prevalence Index = B/A = 2.16

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.

Definitions of Five 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.

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).

SOIL

Sampling Point: we043e_u

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 %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	100					C	redox too faint to color
12-18	10YR 2/1	100					C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ 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 Mucky 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:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Train 4 Project, Liquifaction Project City/County: Brazoria Sampling Date: 11/20/2018

Applicant/Owner: Freeport LNG State: Texas Sampling Point: we044e_w

Investigator(s): B. Savant, L. Barry Section, Township, Range:

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): microtopography Slope (%): 0-1%

Subregion (LRR or MLRA): T Lat: 28.98881316 Long: -95.31108015 Datum: WGS 1984

Soil Map Unit Name: 39 - Surfside clay NWI classification: PEM1A

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:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 two 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:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: we044e_w

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size:)			
1. *Stellaria media*	60	Yes	FACU
2. *Schoenoplectus lacustris*	10	No	OBL
3. *Eleocharis palustris*	5	No	OBL
4. *Carex cherokeensis*	5	No	FACW
5. *Symphyotrichum subulatum*	5	No	OBL
6. *Iva annua*	5	No	FAC
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Woody Vine Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	90 (A)		285 (B)

Prevalence Index = B/A = 3.16

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.

Definitions of Five 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.

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).

SOIL

Sampling Point: we044e_w

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ 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 Mucky 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 satured to surface. Soil too wet to color

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Train 4 Project, Liquefaction Project City/County: Brazoria Sampling Date: 11/20/2018

Applicant/Owner: B. Savant, L. Barry State: Texas Sampling Point: we045e_w

Investigator(s): B. Savant, L. Barry Section, Township, Range:

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): microtopography Slope (%): 0-1%

Subregion (LRR or MLRA): T Lat: 28.98902381 Long: -95.31111684 Datum: WGS 1984

Soil Map Unit Name: 39 - Surfside clay NWI classification: PEM1A

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:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 two 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:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: we045e_w

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size:)			
1. *Sabal minor*	10	Yes	FACW
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size:)			
1. *Carex cherokeensis*	60	Yes	FACW
2. *Spartina alterniflora*	20	Yes	OBL
3. *Rubus trivialis*	15	No	FACU
4. *Symphyotrichum subulatum*	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1. *none*	0		
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	110 (A)		225 (B)

Prevalence Index = B/A = 2.04

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.

Definitions of Five 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.

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).

SOIL

Sampling Point: we045e_w

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 %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	90					SC	
	10YR 3/2	10					SC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ 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 Mucky 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:

Soils saturated at 6 inches.

PRELIMINARY COMPENSATORY MITIGATION PLAN

APPENDIX D - PHOTO LOG

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE043E_U_N

Feature:

Upland Corp Plot - WE043E_U

Date:
11/18/2018

Comments:
Area is consistent with upland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing north.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE043E_U_E

Feature:

Upland Corp Plot - WE043E_U

Date:
11/18/2018

Comments:
Area is consistent with upland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing east.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE043E_U_S

Feature:

Upland Corp Plot - WE043E_U

Date:
11/18/2018

Comments:
Area is consistent with upland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing south.

Client: Freeport LNG

Project Number: 0344788

Project Name: Flare Access Road Project

Location: Brazoria County, Texas

Photograph ID:

WE043E_U_W

Feature:

Upland Corp Plot - WE043E_U

Date:
11/18/2018

Comments:
Area is consistent with upland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing west.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE043E_W_N

Feature:

Wetland Corp Plot - WE043E_W

Date:
10/22/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing north.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE043E_W_E

Feature:

Wetland Corp Plot - WE043E_W

Date:
10/22/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing east.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE043E_W_S

Feature:

Wetland Corp Plot - WE043E_W

Date:
10/22/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing south.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE043E_W_W

Feature:

Wetland Corp Plot - WE043E_W

Date:
10/22/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing west.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE044E_W_N

Feature:

Wetland Corp Plot - WE044E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing north.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE044E_W_E

Feature:

Wetland Corp Plot - WE044E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing east.

Client: Freeport LNG

Project Number: 0344788

Project Name: Flare Access Road Project

Location: Brazoria County, Texas

Photograph ID:

WE044E_W_S

Feature:

Wetland Corp Plot - WE044E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing south.

Client: Freeport LNG

Project Number: 0344788

Project Name: Flare Access Road Project

Location: Brazoria County, Texas

Photograph ID:

WE044E_W_W

Feature:

Wetland Corp Plot - WE044E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing west.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE045E_W_N

Feature:

Wetland Corp Plot - WE045E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing north.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE045E_W_E

Feature:

Wetland Corp Plot - WE045E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing east.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE045E_W_S

Feature:

Wetland Corp Plot - WE045E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species. Photo is taken facing south.

Client: Freeport LNG	Project Number: 0344788
Project Name: Flare Access Road Project	Location: Brazoria County, Texas

Photograph ID:

WE045E_W_W

Feature:

Wetland Corp Plot - WE045E_W

Date:
11/18/2018

Comments:
Area is consistent with wetland conditions and vegetation dominated by herbaceous and scrub shrub species with minimal trees in the area. Photo is taken facing west.