

6.0 Determination of Compensatory Mitigation Requirement

The permittee's consultant, Perennial, determined pre-construction and post-construction physical, biological, and chemical Functional Capacity Indices (FCI) by applying the *Riverine Forested HGM Interim* model to the existing conditions of the forested wetlands that will be converted to herbaceous wetlands by the Project and to the anticipated conditions of the same wetlands after the pipeline is installed, pre-construction contours are restored, and the vegetation is regularly mowed to prevent the establishment of woody vegetation. The difference between these pre-construction and post-construction physical, biological, and chemical FCI was then multiplied by the acreage of conversion to calculate the Functional Capacity Units (FCUs) needed to compensate for the loss in function caused by the conversion. Wetland conversion FCUs are provided in Table 3.

Table 3: Project Wetland Impact Summary

Condition	Wetland Type	Area (Acres)	FCU		
			Physical	Biological	Chemical
Pre-Construction	Forested wetland	7.32	5.17	4.02	5.46
Post-Construction	Herbaceous wetland	7.32	3.45	0.94	3.71
Impact Total			1.72	3.08	1.75

Similarly, RES applied the same method using the *Riverine Forested HGM Interim* model to calculate the difference in FCI and FCUs between the existing conditions and the expected conditions of the PRM Site after the work plan is implemented; both for re-establishment (upland to forested wetland) and rehabilitation (emergent wetland to forested wetland) areas on the PRM Site. The expected physical, biological, and chemical FCUs were calculated for Year 5 following planting of trees on the PRM Site. As shown in Table 4 and Appendix B, the expected Year 5 FCUs to be provided by the PRM Site would each exceed the physical, biological, and chemical FCUs that will be lost by the implementation of the Project. Based on the acreage required to mitigate for conversion, surplus physical and chemical FCUs will be produced; and as the PRM Site develops after Year 5, further increases in functional values are expected.

Table 4: Wetland Mitigation Summary

Mitigation Approach	Wetland Type	Area (Acres)	FCU*		
			Physical	Biological	Chemical
Re-establishment	Upland to forested wetland	4.00	2.36	2.80	2.92
Rehabilitation	Herbaceous wetland to forested wetland	1.02	0.16	0.43	0.16
Minimum Mitigation Totals at Year 5		5.02	2.52	3.23	3.08

*Supplemental data and calculations can be found in Appendix B regarding the mitigation FCU production.

7.0 Mitigation Work Plan

Restoration will be accomplished through hydrological modifications, to the extent practicable, and native species afforestation with a dominance of hydrophytic vegetation. This includes, but is not limited to: the filling of artificial drains/ditches, the dismantling of levees and berms, restoring natural surface topography, site preparation, and replanting of native bottomland hardwood tree species (Appendix A, Figure 12).

2. FCUs measured and calculated within the PRM Site will be equal to or greater than the amount required to compensate for the conversion associated with the Project as shown in Appendix B: iHGM Tables and summarized below (Table 5):

Table 5: Minimum FCUs to be Provided to Offset Impacts

Function	FCU
Physical	1.72
Biological	3.08
Chemical	1.75

10.0 Monitoring and Reporting Protocols

10.1 Monitoring

In Year 1, two randomly-selected vegetation monitoring stations/plots will be permanently implemented within the PRM Site. Each station will be 1/10th acre (radius = 37.2 feet) in size. Stations will be marked using an 8-foot PVC pipe anchored with a metal T-post at plot center and GPS coordinates will be recorded. The vegetation stations will be monitored annually in the spring for at least 10 years or until performance standards are achieved, whichever is later. During monitoring, four photos will be taken at the center of each monitoring plot facing outward toward each cardinal direction (north, south, east, and west). Each planted seedling/sapling falling within each monitoring station will be geotagged and documented.

A continuous groundwater monitoring well will be installed within the PRM Site to monitor hydrology. It will be evaluated to collect pertinent data at least daily throughout the growing season, including the collection of information to substantiate whether the site exhibits the appropriate hydrology for the wetland community types being restored.

10.2 Reporting Protocols

10.2.1 As-Built Report

An as-built report will be submitted to the USACE within 60 days following completion of construction and initial planting work on the PRM Site. No deviation from the Mitigation Work Plan described in this document will occur without prior approval from the USACE. The as-built report will include the following:

1. A discussion of any deviations from the Mitigation Work Plan and associated correspondence with the USACE;
2. The GPS-referenced locations of monitoring plots and groundwater monitoring wells;
3. A plan view map of the constructed/restored wetlands, degraded berms, filled ditches, vegetation monitoring plots, and groundwater monitoring wells;
4. At least four photos taken from the center of the vegetation monitoring plots facing north, south, east, and west;
5. Documentation of geotagged seedling/sapling within each monitoring station; and
6. Description regarding invasive species prevalence and composition in the sampling plots and throughout the PRM Site.

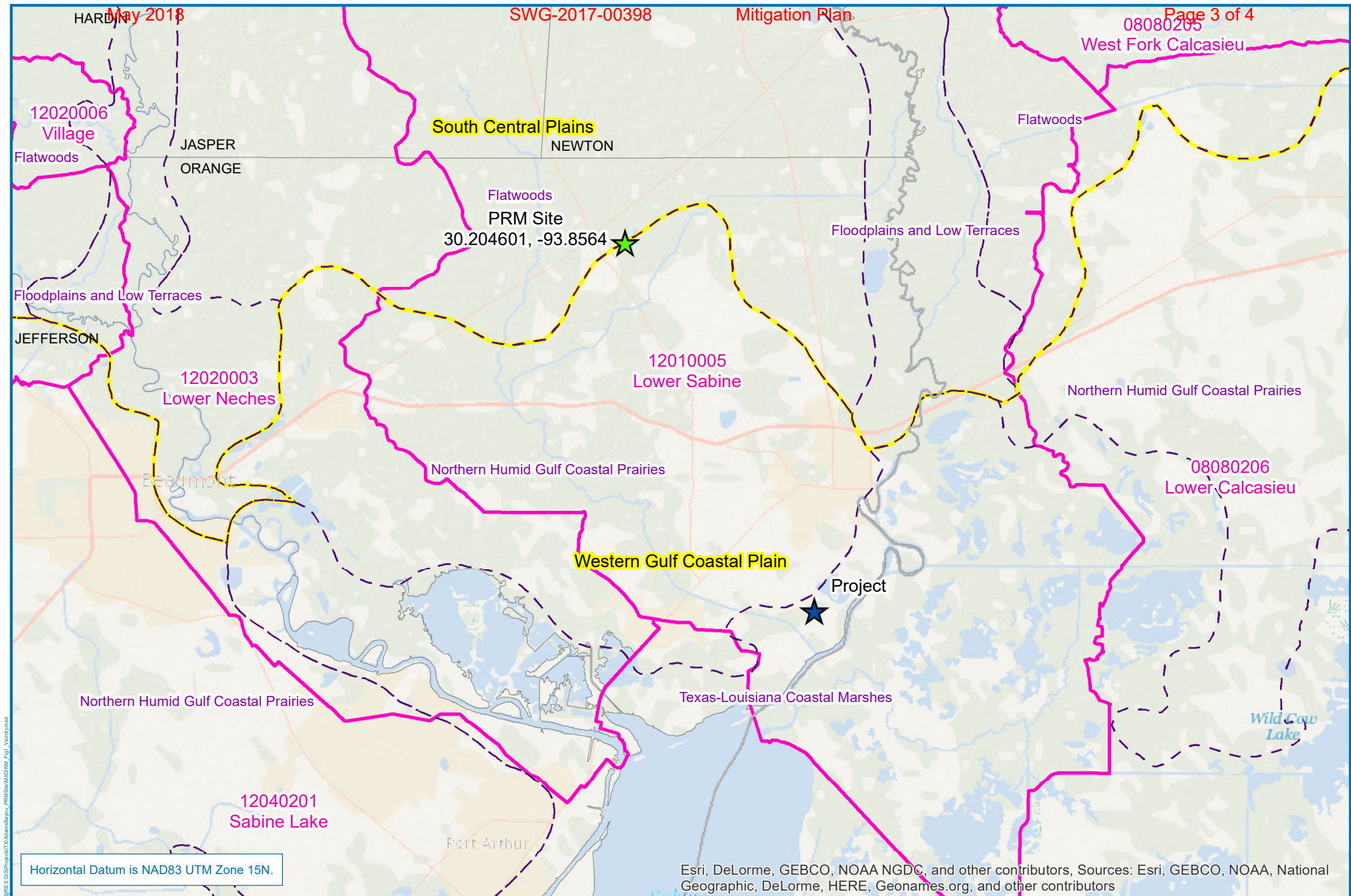


Figure 1. Vicinity Map

PRM Plan
KMTejas – KMLP 24-Inch Interconnect Lateral Project

Orange County, Texas

- ★ PRM Site
- ★ Project
- Level III Ecoregion
- Level IV Ecoregion
- 8-Digit HUC Watersheds

Date: 6/27/2017

Drawn by: AB

Checked by: MG

PRM Plan



May 2018

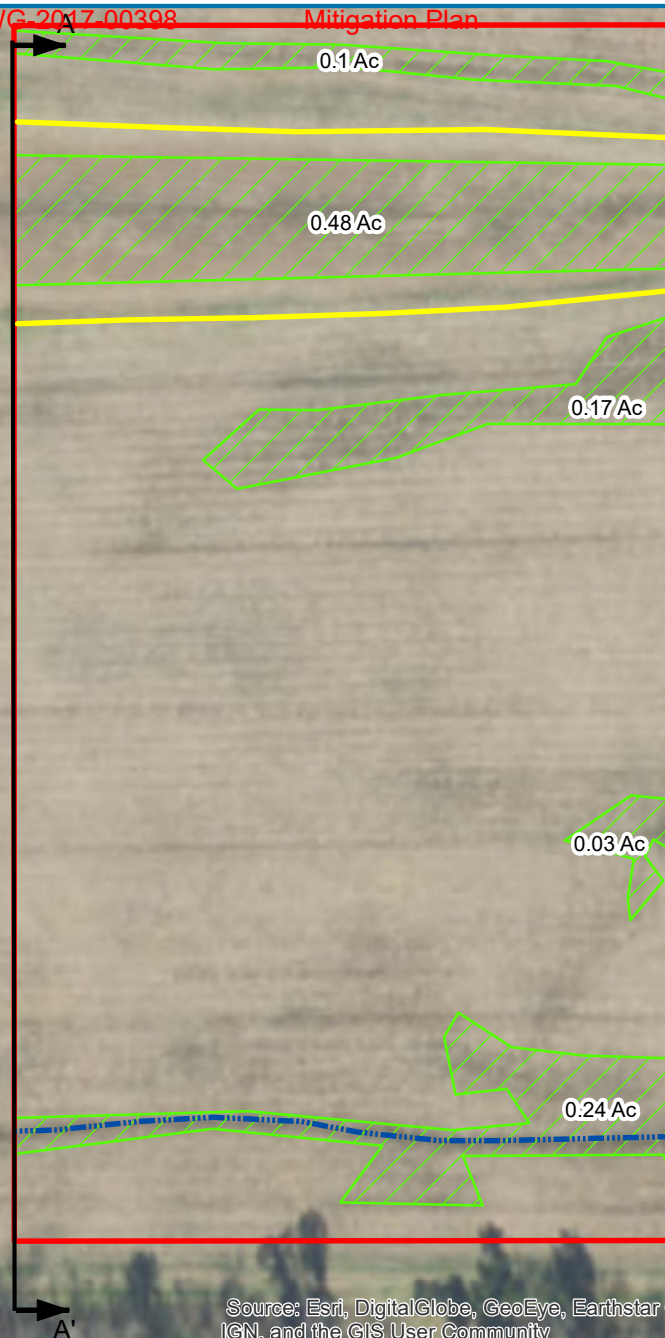
SWG-2017-00398

Mitigation Plan

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- Cross-Section (Figure 13)
- Drainage to be Filled
- Proposed
 - Completed
- Berm to be Degraded
- Proposed
 - Completed
- PRM Site to be Restored to BLH
 - Previously Constructed PRM Site
 - Delineated Herbaceous Wetlands

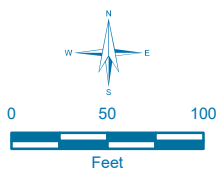
Horizontal Datum is NAD83 UTM Zone 15N.
Note: wetlands extend beyond proposed PRM boundaries to east and west, but not immediately to the north and south.



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

Figure 12. Restoration Plan

PRM Plan
KMTejas - KMLP 24-Inch Interconnect Lateral Project
Orange County, Texas



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PRM Plan

