Mitigation Attachment

State Road 30E / Cape San Blas Road
(from SR 30A west to St. Joseph Bay State Buffer Preserve, Troy Deal Unit)
FDOT 416943-1

March 3, 2015

Wetland Impact: Estimated 0.48 acres of permanent wetland loss. Functional loss (UMAM) is estimated at 0.08 units. Located in Gulf County, Florida, the impacts are wholly within the St. Joseph Bay watershed (a component of the St. Andrew Bay SWIM Basin).

Proposed Mitigation: Island Road Hydrologic Enhancement (one Low-Water-Crossing) at St. Joseph Bay State Buffer Preserve, Gulf County, St. Andrew Bay SWIM Basin (29.68616^{o} N, -85.29271^{o} W).

USACE Permit: SAJ-2014-00624

Scope

The St. Joseph Bay State Buffer Preserve (Buffer Preserve), located adjacent to the SR 30E impacts, owns and manages for ecological integrity over 5,000 acres of generally high-quality natural habitat for the express purpose of protecting the aquatic resources of St. Joseph Bay, and to conserve and restore environmentally sensitive ecosystems. Island Road, a dirt road raised above natural grade and necessary for management access, disrupts the natural hydrology of adjacent freshwater marsh wetlands. This mitigation project will offset the wetland functional loss associated with FDOT road improvements on SR 30E (Cape San Blas Road from SR 30A west to the start of the Tory Deal Unit of the Buffer Preserve) by enhancing the hydrologic function of 6.49 acres of wetlands via construction of one (1) low-water-crossing.

1—Objectives

The objective of this project is to enhance the hydrology of an estimated 6.49 acres of wetlands (FLUCCS 6410 – Freshwater Marshes) via construction of one (1) low-water-crossing on Island Road, a raised dirt road used for Buffer Preserve management access.

Pre-Restoration Habitat Cover—Freshwater Marshes Wetlands (FLUCCS 6410); 6.49 acres.

Post-Restoration Habitat Cover—Freshwater Marshes Wetlands (FLUCCS 6410); 6.49 acres.

2—Site Selection Criteria

The St. Joseph Bay watershed (~130 mi^2) is a component of the much larger (~1,200 mi^2) St. Andrew Bay SWIM (Surface Water Improvement and Management) Basin. Protected areas within the St. Joseph Bay watershed include:

- St. Joseph Peninsula State Park,
- St. Joseph Bay Aquatic Preserve,
- St. Joseph Bay State Buffer Preserve (Buffer Preserve),
- Pig Island (St. Vincent National Wildlife Refuge),
- Eglin Air Force Base managed areas.

St. Joseph Bay is a Class II waterbody (approved for shellfish harvesting), is designated as an Outstanding Florida Water (OFW), and is a USEPA Gulf of Mexico Ecological Management Site (GEMS). Preservation, restoration and management of wetlands and natural uplands at the St. Joseph Bay State Buffer Preserve help to protect the water quality, habitat, and spawning and nursery grounds of St. Joseph Bay.

This site was selected as offsetting mitigation for the SR 30E (Cape San Blas Road from SR 30A west to the Troy Deal Unit, St. Joseph Bay State Buffer Preserve) impacts for the following reasons:

- The impacts are not within the service area of any existing or planned mitigation bank.
- The impacts are hydrologically connected to the mitigation area, located approximately one mile away.
- The impacts and mitigation area are within the same local watershed.
- The mitigation addresses ecological needs of the St. Joseph Bay watershed.
- The mitigation will enhance freshwater marsh wetlands (with minor forested wetland inclusions).
- The mitigation enables the St. Joseph Bay State Buffer Preserve to implement wetland enhancements that would otherwise be unfunded.

When complete, the mitigation will be self-sustaining and managed for ecological integrity in perpetuity by the ARC-approved (Acquisitions and Restoration Council) St. Joseph Bay State Buffer Preserve management plan.

3—Site Protection Instrument

The mitigation area will be preserved in perpetuity in a natural condition as state-owned preservation lands, and will be managed for ecological integrity in accordance with the ARC-approved (Acquisition and Restoration Council) St. Joseph Bay State Buffer Preserve management plan. The Buffer Preserve (>5,000 acres) was acquired by the Florida Department of Environmental Protection's (FDEP) Office of Coastal and Aquatic Managed Areas (CAMA) with a "designated single use of the property" as conservation and preservation. Per Florida Statutes, CAMA has assessed the property and determined that no lands at the Buffer Preserve would be suitable for surplus. The Buffer Preserve limits public access to uses that do not conflict with the goals of conservation and preservation.

4—Baseline Information

The Island Road mitigation area at the St. Joseph Bay State Buffer Preserve consists of a dirt road raised above natural grade with fill material that bisects freshwater marsh wetlands. One failed, inadequately-sized culvert is present. This road blocks natural hydrologic flows.

Maps and Figures (see attached)

- Location of St. Joseph Bay State Buffer Preserve, Island Road Mitigation Area, and the SR 30A impact site.
- 2013 DOQ of Island Road Mitigation Area.
- 1953 B&W Aerial of Island Road Mitigation Area.
- LiDAR of Island Road Mitigation Area.
- Soils (NRCS) for Island Road Mitigation Area.
- Low-Water-Crossing Engineering Drawing.
- 2013 DOQ Closeup of Mitigation Area with Approximate Footprint of LWC
- 2015 Photo of Existing Condition.

Historically, the Buffer Preserve was primarily a mix of hydric pine flatwoods, salt marsh, and mesic flatwoods. During the 20th century, forestry, turpentine operations, and open range cattle grazing were conducted on portions of the property. Acquired by the state of Florida in multiple purchases from 1995 – 2002, management has included prescribed fire, thinning of pine, and some hydrologic enhancements.

5—Determination of Credits

Estimated mitigation credits for this project were derived using the Uniform Mitigation Assessment Method (UMAM). Assessments by NWFWMD staff suggest that implementation may yield up to 0.45 UMAM credits, subject to approval by the USACE.

Determining the wetland area enhanced by installation of low-water-crossings (LWCs) is necessarily subjective. For UMAM scoring purposes and based on extensive experience in Tates Hell State Forest using protocols previously accepted by the USACE, NWFWMD staff estimate the LWC would enhance 6.49 acres. The assumption is that the hydrologic enhancement benefits will extend at least 300 feet out from the center of each LWC; the area of the road footprint is ignored for UMAM calculation purposes.

6—Detailed Work Plan

The Island Road low-water-crossing (LWC) site is located in a low-energy hydraulic environment, will not be subject to significant scour potential, and will typically only contain water under wet weather conditions. Existing road fill at the LWC site will be excavated to natural grade with approaches at a maximum 4% grade, a geotextile woven fabric (conforming to FDOT Design Standards, Index 199, Class D-1 or D2) lain down with a minimum fabric overlap of 2 ft., and covered with a 12 inch thick coarse aggregate base consisting of limestone or granite 2-6 inches in diameter (D_{50} = 4 inches). A 12 inch thick rock apron consisting of 6-10 inch diameter material (D_{50} = 8 inches) will be placed on each side of the LWC. Road fill excavated from LWC construction will be stored or disposed in an appropriate area on the Buffer Preserve; it will not be placed into any wetland area or upland area that is managed in a natural state. Final dimensions are estimated at approximately 155’ x 14’, plus a 1.5’ wide rock apron on either side of the center 60’ at natural grade of the LWC. Cut & fill is estimated at approximately ~100 yd^3 or less.

Construction activities are anticipated to be completed prior to 2016, depending on weather, site conditions, and other circumstances outside the control of the NWFWMD. Construction will be performed during dry weather and will be temporarily suspended during periods of heavy rainfall or high water levels. Grading and excavation activities are anticipated to be performed using heavy equipment such as backhoes, small bulldozers or excavators.

Best Management Practices (BMPs) for turbidity, sedimentation and erosion control will be implemented and maintained at all times during construction to prevent siltation and turbid discharges into waters of the state. Silt and sedimentation control measures will be installed and properly maintained at all points where runoff from disturbed areas could result in water quality violations of Chapter 62-302, F.A.C.

Staging of Construction Activities. The excavation and moving of soil materials will be scheduled in stages to minimize the size of areas disturbed and unprotected from erosion for the shortest reasonable time.

Protection of Desirable Vegetation. Stockpiling, vehicular parking and excessive foot or vehicular traffic will not be allowed within wetland areas. Material storage, fueling and servicing equipment, undertaking equipment maintenance, and cleaning will not be performed in or immediately adjacent to wetland areas. Erosion and sediment controls, such as silt fences, may be needed around the perimeter of stockpiles to prevent the transportation of soils from the area.

Best Management Practices. Erosion control measures which will minimize impacts to wetlands and wetland vegetation will be used during construction activities. This can be accomplished by the use of floating turbidity barriers, floating silt screen/curtains, sediment basins, earthen berms, and straw, geotextile or similar bale or log barriers which are free of exotic or noxious weed species. The use of staked silt fences is not recommended except to contain stockpiles in areas such as roadbeds that are outside wetland areas. Erosion controls where flowing water may be present, such as low water crossings, will require best management practices appropriate for the field conditions. Straw or similar bales or logs may not be appropriate where flowing water is present. Floating turbidity barriers or silt screen/curtains and temporary earthen berms are best management practices that may be used to prevent the transport of sediment in ditches, streams, and wetland waterways.

Stabilization of Disturbed Areas. Prompt stabilization of all disturbed areas will be undertaken during and after completion of the project. All disturbed areas will be stabilized within two weeks of disturbance. Suitable methods for stabilization are grading, establishment of a vegetative cover by mulching and/or seeding, and the use of geo-textiles. When seeding and mulching, Brown Top Millet seed or similar (free of exotic or noxious weed species) will be applied to disturbed areas and covered with approximately one (1) inch thick organic mulch of wheat straw (free of exotic or noxious weed species). Steep slopes are more susceptible to erosion than flatter slopes, so temporary mulching and quick establishment of vegetation are extremely important. Jute mats, or similar devises, may be used on steep slopes until the vegetation has become established to prevent erosion.

Suspension of Work During Inclement Weather. Construction will be carried out during dry weather conditions to the extent practical and erosion and sedimentation control measures will be implemented. Excavations and other construction activities will be suspended during periods of inclement weather or high water levels if there is potential for environmental damage.

Inspection and Maintenance of Erosion and Sedimentation Control. Routine inspection and maintenance of erosion and sedimentation control features will be provided until the project is complete. Barriers will be regularly maintained to insure their effectiveness. Sediments will be cleaned out periodically and before major predicted rainfall events.

Removal of Sediment and Erosion Control Measures. All temporary erosion control measures, whether temporary sediment basin, silt fence, straw bales, or other measures, will be removed following the successful establishment of vegetation.

Eastern Indigo Snake Protection/Education Plan. All work will be implemented in accordance with an "Eastern Indigo Snake Protection/Education Plan" approved by the USACE, which shall be compliant with the US Fish and Wildlife Service's "Standard Protection Measures for the Eastern Indigo Snake" (2/12/2004).

7—Maintenance Plan

After hydrologic enhancements are implemented, this site will be maintained in perpetuity by the St. Joseph Bay State Buffer Preserve in accordance with their ARC-approved (Acquisition and Restoration Council) management plan. Prescribed fire will be a major tool in managing adjacent flatwoods.

8—Performance Standards

- Low-water-crossing is installed at appropriate elevation.
- Excavated road fill is stored and stabilized or disposed in appropriate upland area.
- Non-failure of low-water-crossing.

9—Monitoring

Monitoring protocols to ensure that the hydrologic enhancements are maintained will be conducted annually for a minimum of five years from the start of mitigation activities or as required by USACE permit conditions. Monitoring will be performed by NWFWMD staff or qualified consulting firms. All monitoring reports, expected to consist of general photos, panoramic photos, and site condition notes, will be posted at www.NWFWMDwetlands.com (or any successor website). Corrective measures will be taken if necessary.

10—Long-term Management

The enhanced freshwater marsh wetlands, forested wetlands, and adjacent hydric and mesic pine flatwoods will be managed long-term by the St. Joseph Bay State Buffer Preserve in accordance with their ARC-approved (Acquisition and Restoration Council) management plan. The Buffer Preserve emphasizes prescribed fire as a management tool.

11—Adaptive Management Plan

If changes in the implementation of this mitigation plan become necessary due to the stochastic nature of ecological processes, the NWFWMD will first obtain approvals from the USACE.

12—Financial Assurances

The NWFWMD is a governmental entity created by the Florida Water Resources Act of 1972 with the mission of protecting water resources protection and ecosystem integrity. Funds from FDOT are specifically earmarked to implement and maintain mitigation.

As of 7/31/2014, the NWFWMD had $17,776,427.43 in a dedicated mitigation fund. This fund was established to receive payment from sales of mitigation credits and to ensure adequate funding for the implementation and long-term management of mitigation sites, in accordance with 62-342.850 FAC.

Other Information

Any additional information requested by the USACE to determine the appropriateness, feasibility, and practicability of this compensatory mitigation project will be provided.

SR 30E / Cape San Blas Road (from SR 30A west to Troy Deal Unit, St. Joseph Bay State Buffer Preserve)

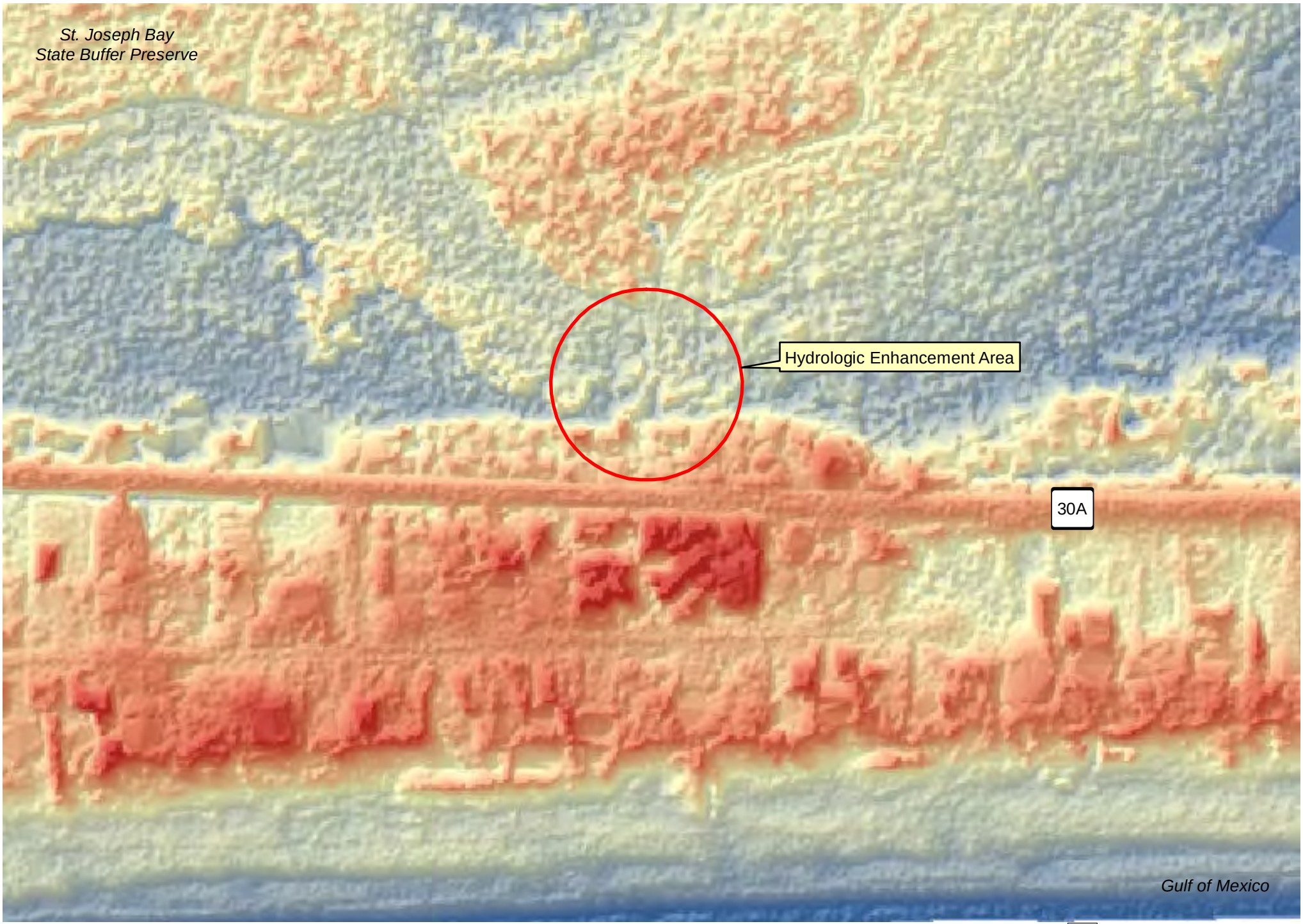
2013 DOQ

0 1 2 Miles

Island Road Hydrologic Enhancement - 2013 DOQ

Island Road Hydrologic Enhancement - 1953 B&W Aerial

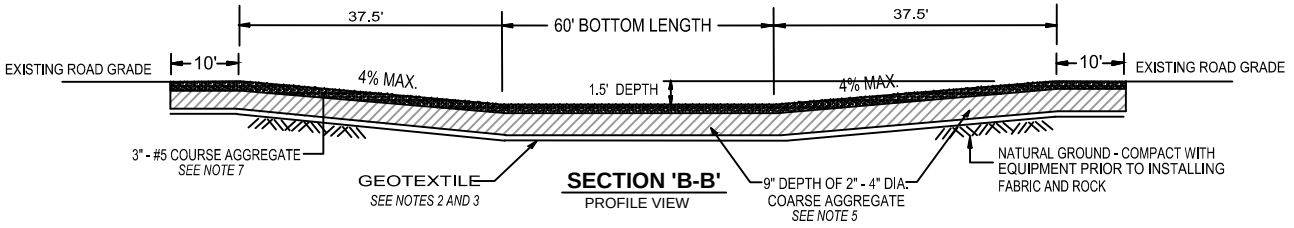
Island Road Hydrologic Enhancement - LiDAR



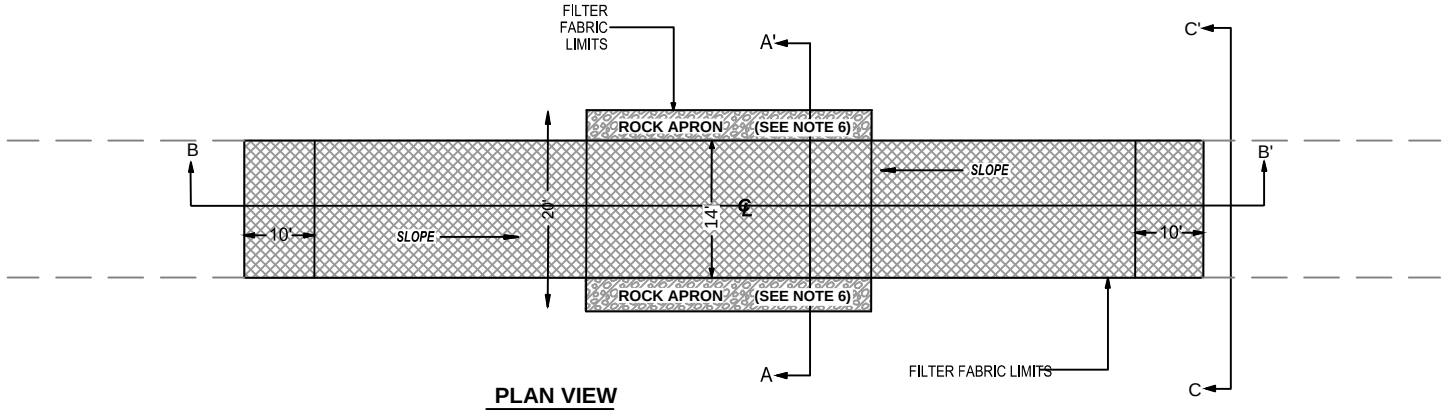
Island Road Hydrologic Enhancement - Soils (NRCS)

HARDENED LOW WATER CROSSING DETAIL

(NOT TO SCALE)



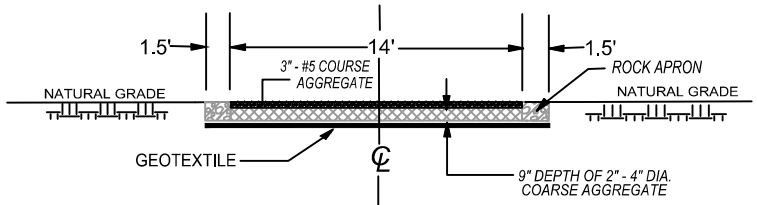
SECTION 'B-B'
PROFILE VIEW



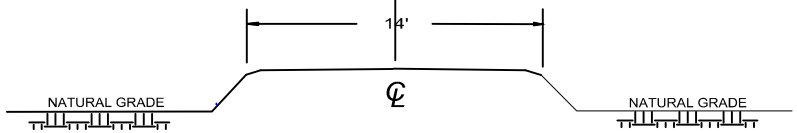
PLAN VIEW

NOTES:

1. LIMEROCK SHALL BE TRUCK DUMPED AND MACHINE SPREAD OVER THE FABRIC FOLLOWING PLACEMENT OF FABRIC.
2. GEOTEXTILE FABRIC SHALL CONFORM TO FDOT 2013 DESIGN STANDARDS INDEX 501, USAGE 3.
3. MINIMUM FABRIC OVERLAP SHALL BE 6" ON EACH EDGE. ROCK SHALL BE PLACED ON LAP PRIOR TO PLACING ROCK ON SINGLE LAYERS OF FABRIC TO PREVENT LATERAL MOVEMENT.
4. ALL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
5. UNLESS OTHERWISE APPROVED BY ENGINEER COARSE AGGREGATE SHALL MEET FDOT SIZE #1 OR #2 GRADATION (~2"-4" DIA.) AND CONSIST OF LIMESTONE OR GRANITE WITH A MAXIMUM L. A. ABRASION LOSS OF 35%.
6. ROCK APRON SHALL CONSIST OF BEDDING STONE, RUBBLE OR COBLES IN THE 6" TO 8" RANGE WITH A D50 0F 7 INCHES.
7. UNLESS OTHERWISE APPROVED BY ENGINEER, TOP LAYER OF COURSE AGGREGATE SHALL MEET FDOT SIZE #5 GRADATION (SEC. 901) WITH A MAXIMUM L.A. ABRASION LOSS OF 35%.



SECTION 'A-A'



SECTION 'C-C'

LINDA D. CHAISSON — SIGNED

DATE

51357 — LICENSE NO.

ISLAND ROAD HYDROLOGIC ENHANCEMENTS
LOW WATER CROSSING DETAIL

DATE : 3-2-15		NOT TO SCALE
PROJECT :		SHEET 1 OF 1

Island Road Hydrologic Enhancement - 2013 DOQ (Closeup w/Approximate Footprint of Proposed Low-Water-Crossing)

Island Road Hydrologic Enhancement - Current Condition (2/23/2015)

Island Road Wetland Enhancements (Saint Joseph Bay State Buffer Preserve)
UMAM Estimate - 2/23/2015

Polygon	UMAM Acres	L1	L2	W1	W1	C1	C2	W/Out	With	Raw Delta	Time Lag	P Factor	Risk	Adjusted Delta	UMAM Credits
A (LWC)	6.49	8	8	7	8	8	9	0.77	0.83	0.07	1	1	1	0.07	0.454
	6.49	(Wetland Acreage Total)											**(Total UMAM Credit)**		**0.45**

Polygon "A (LWC)" is centered on a proposed Low-Water-Crossing (LWC) on Island Road at the St. Joseph Bay State Buffer Preserve. Delineating an area that is ecologically enhanced by construction of a LWC is inherently arbitrary. UMAM assumptions used here are that a LWC will enhance 6.49 acres of wetlands (this assumption is based on extensive experience implementing hydrologic enhancements in Tates Hell State Forest and has been previously accepted by the USACE).

UMAM Acres - Area of assessment polygon.

L1 - Location and Landscape Support score (Pre-Mitigation).

L2 - Location and Landscape Support score (Post-Mitigation).

W1 - Water Environment score (Pre-Mitigation).

W2 - Water Environment score (Post-Mitigation).

C1 - Community Structure score (Pre-Mitigation).

C2 - Community Structure score (Post-Mitigation).

W/Out - UMAM Functional Value Pre-Mitigation (0 = No Value, 1 = 100% Functional Value).

With - UMAM Functional Value Post-Mitigation (0 = No Value, 1 = 100% Functional Value).

Raw Delta - "With" minus "W/Out" (the raw functional lift from implementation of the mitigation).

Time Lag - Lag between when mitigation is implemented and when target ecological conditions are achieved.

P Factor - Preservation Factor (only used for preservation-only mitigation projects).

Risk - Risk that mitigation project will fail.

Adjusted Delta - Functional lift of mitigation project adjusted for Time Lag, Risk, and Preservation Factor.

UMAM Credits - Functional UMAM Credits generated from mitigation project.

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Island Road (St. Joseph Bay Buffer Preserve)	**Not Applicable**	**A - Low-Water-Crossing**

FLUCCS code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6410	**---**	**Mitigation**	**6.49 Acres**

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Andrew Bay SWIM Basin	**III**	**---**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

Wetlands contiguous to Saint Joseph Bay (a component of the Saint Andrew Bay SWIM basin).

Assessment area description

Freshwater Marsh Wetlands (FLUCCS 6410). Natural hydrologic flows are blocked by Island Road (a raised road maintained for management access by the St. Joseph Bay State Buffer Preserve).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Joseph Bay. Gulf of Mexico. St. Joseph Bay State Buffer Preserve. SR 30A.	**Not unique.**

Functions	Mitigation for previous permit/other historic use
Water storage; water quality; floral and faunal habitat.	**None**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
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Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.)

Additional relevant factors

Assessment conducted by	Assessment date(s)
NWFWMD Staff	**2/23/2015**

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Island Road (St. Joseph Bay Buffer Preserve)	**Not Applicable**	**A (LWC)**
Impact or Mitigation	Assessment conducted by:	Assessment date:
Mitigation	**NWFWMD Staff**	**2/23/2015**

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

	w/out mit	w/mit	
.500(6)(a) Location and Landscape Support	8	8	**Without Mitigation** - Island Road bisects wetland habitat. Natural buffers west, north, and east of site. SR 30A approximately 100 FT to the south of the site. **With Mitigation** - Installation of low-water-crossing will improve wetland habitat connectivity, although LLS value will not change.
.500(6)(b)Water Environment (N/A for Uplands)	7	8	**Without Mitigation** - Island Road blocks natural hydrologic flows. **With Mitigation** - Hydrologic blockage is removed and hydrologic regime is enhanced.
.500(6)(c)Community structure Vegetation and/or Benthic Community	8	9	**Without Mitigation** - Vegetation community within assessment polygon is managed for ecological integrity by St. Joseph Bay State Buffer Preserve. However, long-term disruption of hydrologic flows may negatively affect long-term trajectory of vegetation community. **With Mitigation** - Continued management by Buffer Preserve. Enhancement of hydrologic flows may improve long-term vegetation community trajectory.

Score = sum of above scores/30 (if uplands, divide by 20)	w/out mit	w/mit
	0.77	0.83

Raw Delta = [w/mit - w/out mit]
0.07

Preservation Adjustment Factor (PF) =	**1**
Time Lag Factor =	**1**
Risk Factor =	**1**
Adjusted Delta [(Raw Delta * PF) / (T * R)] =	**0.07**

UMAM Functional Assessment	
Polygon Acreage =	**6.49**
Functional Gain w/Mitigation (Adjusted Delta * Acres) =	**0.45**