PERDIDO RIVER WMA – PHASE II MITIGATION

UWRMP Section 5.1.4 Supplement (with 1/12/12 Addendum)

January 15, 2009

Background:

In 2006, the NWFWMD acquired (fee-simple) 5,456 acres from the International Paper Company (IP) to establish the Perdido River Water Management Area (WMA). These lands are adjacent to the eastern bank of the Perdido River (OFW—Outstanding Florida Waters designation by FDEP), and consist of a mosaic of forested wetlands and upland buffers, with extensive cover of loblolly and slash pine plantation. Harvesting rights for merchantable timber stands have been reserved by IP through 2011; the purchase price for this acquisition was $12,085,069. Plans developed for the enhancement and restoration of 67± acres of wetlands and associated upland buffers on the Perdido River WMA lands (i.e., "Phase II Mitigation") to offset FDOT impacts associated with replacement of the US 90 Perdido River Bridge are described below.

Objectives (see Final Rule § 332.4(c)(2)):

Silviculture is the major land use within the Perdido River watershed, and has resulted in substantial conversion and degradation of wetland habitat. Implementation of this project (Perdido River WMA – Phase II Mitigation) will directly address the ecological needs of the Perdido River watershed. It will enhance and restore 67± acres of former IP silvicultural lands to a mixture of 54± acres of forested wetlands and 13± acres of associated forested upland buffers.

Current Habitat Cover. 55 acres of Pine Plantation – FLUCCS 441 (loblolly pine planted in 2002) and 12 acres of Wetland Forested Mixed – FLUCCS 630.

Post-restoration Habitat Cover. 16 acres of Hydric Pine Flatwoods – FLUCCS 625, 38 acres of Wetland Forested Mixed – FLUCCS 630, and 13 acres of Mesic Pine Flatwoods – FLUCCS 411.

Site Selection Criteria (see Final Rule § 332.4(c)(3)):

This site was selected as offsetting mitigation for wetland impacts associated with replacement of the US 90 Perdido River Bridge in accordance with criteria described in UWRMP Chapter 3. Specifically, this mitigation project occurs within ¼ mile of the impact, replaces similar wetland types, is hydrologically connected to the impacted wetlands, and is part of a larger NWFWMD habitat enhancement and restoration effort for the Perdido River watershed.

Site Protection Instrument (see Final Rule § 332.4(c)(4)):

In accordance with § 332.7(a) and § 230.97(a) (i.e., site protection clauses) of the USACE/EPA compensatory mitigation Final Rule, title to this site (fee-simple) will be held in perpetuity by the NWFWMD and managed as conservation/mitigation lands under the Umbrella Plan.

Baseline Information (see Final Rule § 332.4(c)(5)):

Maps (see attached)

- Location within watershed
- Location of mitigation site relative to impact site
- 1940 B&W aerial
- 2007 DOQ
- LiDAR digital elevation model (DEM) and elevation profiles
- Soils (NRCS)
- Existing habitat cover (FLUCCS)
- Target habitat cover (FLUCCS)
- Topography (USGS Quadrangle)
- UMAM mitigation polygons

Currently, this site is mostly bedded pine plantation with some inclusions of forested wetlands. Hydrologic sheet flow has been altered by windrows and bedded pine. Historic aerials suggest the site may have been used as pasture prior to conversion to forestry operations.

Determination of Credits (see Final Rule § 332.4(c)(6)):

Mitigation credits for this project were derived using the Uniform Mitigation Assessment Method (UMAM). As calculated from UMAM scores agreed to by the USACE/IRT during a field visit on 3/24/08, implementation of this mitigation project will yield 11.72 UMAM credits.

These credits may be further classified as FLUCCS 630 – Forested Wetlands Mixed (7.62 UMAM credits) and FLUCCS 625 – Hydric Pine Flatwoods (4.10 UMAM credits).

Detailed Work Plan (see Final Rule § 332.4(c)(7)):

Enhancement and restoration of this site will entail removal of windrows, removal of slash pine plantation and replanting with appropriate mixes of forested wetland species, introduction of appropriate fire regimes, and implementation of management of exotic and/or invasive species. Polygon-specific treatments are described below (see attached Mitigation

Polygon map).

Polygon I – (FLUCCS 441 Current / 630 Restored). This polygon is ~9 acres of mostly pine plantation (FLUCCS 441), with minor inclusions of forested mixed wetlands (FLUCCS 630), that occurs within 300' of US 90. To restore this polygon to Wetland Forested Mixed – FLUCCS 630, the planted slash pine will be removed, relic windrows dispersed, breached or removed, and appropriate forested mixed wetland species planted. Dispersal of relic windrows will only occur during drier periods to prevent rutting and other disturbances to soil structure. Appropriate BMPs will be observed at all times.

Polygon II – (FLUCCS 441 Current / 630 Restored). This polygon is ~18 acres of slash pine plantation (FLUCCS 441) and is greater than 300' from US 90. To restore this polygon to Wetland Forested Mixed – FLUCCS 630, the planted slash pine will be removed, relic windrows dispersed, breached or removed, and appropriate forested mixed wetland species planted. Dispersal of relic windrows will only occur during drier periods to prevent rutting and other disturbances to soil structure. Appropriate BMPs will be observed at all times.

Polygon III – (FLUCCS 630 Current & Post Mitigation). This polygon consists of ~11 acres of Forested Mixed Wetlands – FLUCCS 630 and will be enhanced by management for exotic/invasive species and improvements garnered by restoration of adjacent hydric pine flatwoods and mixed forested wetlands. Prescribed fire from adjacent polygons will be allowed to burn into the Forested Mixed Wetlands areas when it is determined by a state-certified Burn Master that catastrophic damage would not result. Firebreaks will be used only where necessary to prevent catastrophic fire damage. Some brush reduction may be implemented along the margins of this polygon and/or where appropriate

Polygon IV – (FLUCCS 441 Current / 625 Restored). This ~16-acre polygon will be restored to Hydric Pine Flatwoods – FLUCCS 625 by having existing pine plantation (FLUCCS 441) thinned to no more than 112 trees per acre. Brush reduction will be accomplished by prescribed fire and, as necessary, mechanical means such as gyro-tracking or roller chopping. Relic wind rows will be dispersed, breached or removed by bulldozer or other appropriate equipment. Appropriate BMPs will be observed at all times; brush reduction or dispersal of wind rows will occur only during drier conditions when disturbance of the soil matrix is unlikely to occur. To promote groundcover diversity, wiregrass and other species may be planted or seeded if necessary. Prescribed fire (growing season) and exotic/invasive species control will be implemented for long-term management. Removal of existing wind rows will improve hydrologic sheetflow conditions.

Polygon V – (FLUCCS 441 Current / 411 Restored). This polygon, ~13 acres, will be restored as Mesic Pine Flatwoods (FLUCCS 411). Pine will be thinned to approximately 200 trees per acre. Prescribed fire and exotics management will be implemented.

Maintenance Plan (see Final Rule § 332.4(c)(8)):

After implementation of mitigation, this site will be actively maintained by NWFWMD lands management personnel as conservation lands within the Perdido River WMA. Maintenance and management will be performed in accordance with UWRMP Chapter 11. Via implementation of an appropriate fire regime, the site is expected to be largely or fully self-sustaining.

Performance Standards (see Final Rule § 332.4(c)(9)):

(Enhancement Success Criteria)

EC1 – Desired species showing evidence of increasing coverage
EC2 – No more than 1% coverage of invasive exotic and 5% nuisance native and non invasive exotic species unless otherwise specified in a management plan
EC3 – Increase in appropriate species diversity
EC4 – Kind and total coverage of species appropriate for management goals and target natural community
EC5 – Kind and total coverage of herbaceous species appropriate for management goals and target natural community
EC6 – Kind and total coverage of tree species appropriate for management goals and target natural community
EC7 – Maintain the ecological conditions so that the mitigation UMAM scores are met for each of the specified community types

(Restoration Success Criteria)

RC1 – Desired species showing evidence of increasing coverage
RC2 – No more than 1% coverage of invasive exotic and 5% nuisance native and non invasive exotic species unless otherwise specified in a management plan
RC3 – Increase in appropriate herbaceous, shrub and / or tree species
RC4 – Kind and total coverage of species appropriate for management goals and target natural community
RC5 – Kind and total coverage of herbaceous species appropriate for management goals and target natural community
RC6 – Kind and total coverage of tree species appropriate for management goals and target natural community
RC7 – Maintain the ecological conditions so that the mitigation UMAM scores are met for each of the specified community types

(see UWRMP Chapter 11 for discussion of performance standards)

Monitoring (see Final Rule § 332.4(c)(10)):

Monitoring protocols necessary to ensure effective preservation, enhancement and restoration will be derived from Chapter 11 of the UWRMP. Annual monitoring will be conducted for five years from the start of mitigation activities or as required by USACE permit conditions. Photo-points and meandering vegetation surveys by a qualified biologist are expected to comprise the monitoring for this site.

Long-term Management (see Final Rule § 332.4(c)(11):

Long-term management, including prescribed fire and exotics control, will be implemented in accordance with UWRMP Chapter 11. The NWFWMD is responsible for ensuring the perpetual management of mitigation lands. Florida Statutes sections 373.1391(1)(a) and 373.59(3) mandate the ecological management and restoration, to the extent practicable, of lands owned by the NWFWMD. Mitigation lands owned by the NWFWMD will be managed in perpetuity for ecological integrity in accordance with the "Management Policies for Water Management Areas of the Northwest Florida Water Management District" (NWFWMD 1998).

Adaptive Management Plan (see Final Rule § 332.4(c)(12)):

All ecological restoration projects are site specific and multiple endpoints are possible owing to the stochastic nature of ecological processes. Additionally, human activities offsite and beyond the control of the NWFWMD may also influence the course of restoration. If changes in the implementation of this mitigation plan become necessary, the NWFWMD will first obtain approvals from the USACE/IRT. The NWFWMD will demonstrate good-faith efforts to comply with restoration requirements and will not invoke an alleged need for adaptive management as a pretext for non-compelling reasons.

Financial Assurances (see Final Rule § 332.4(c)(13)):

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. Details concerning financial assurances are described in UWRMP Chapter 9.

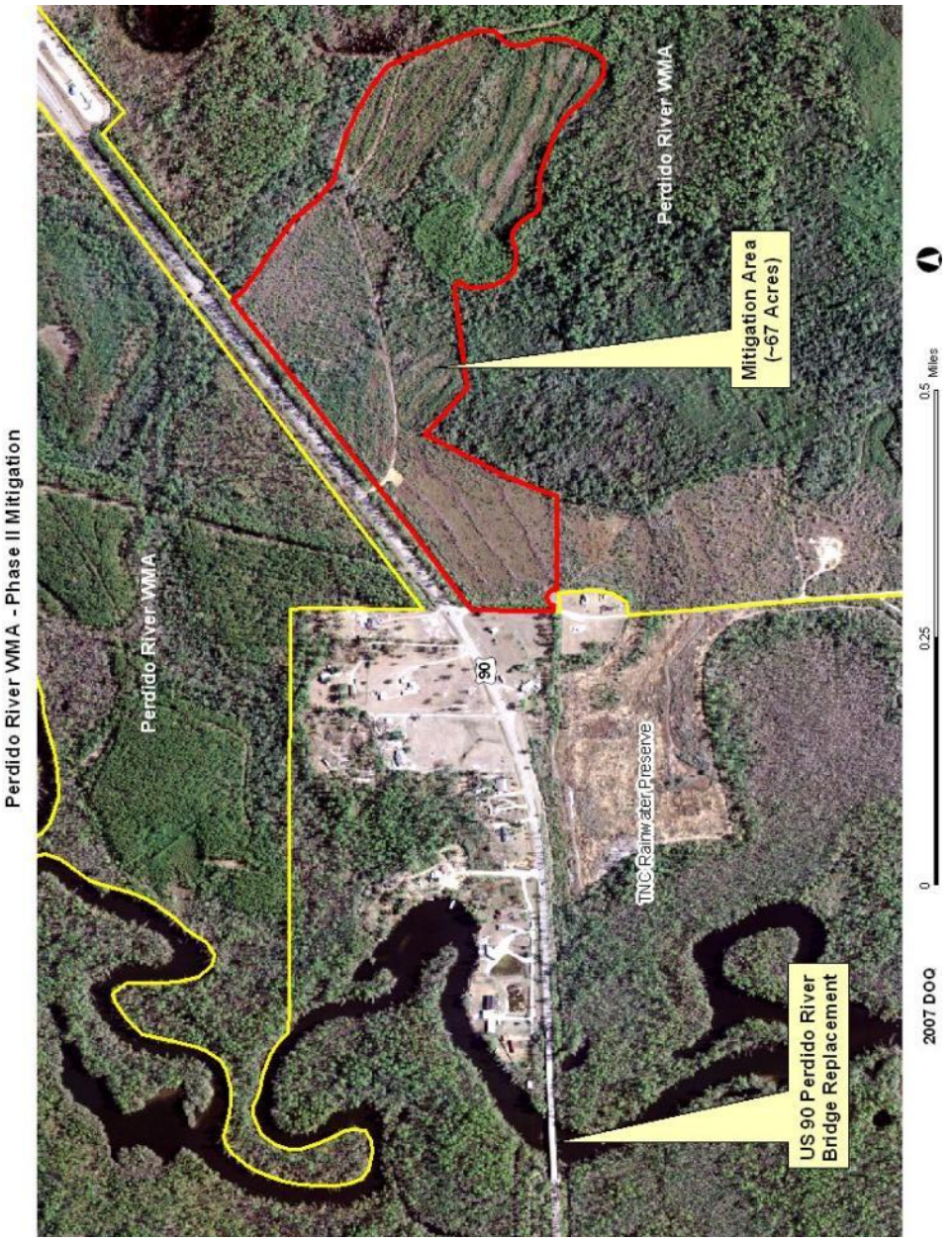
Other Information (see Final Rule § 332.4(c)(14)):

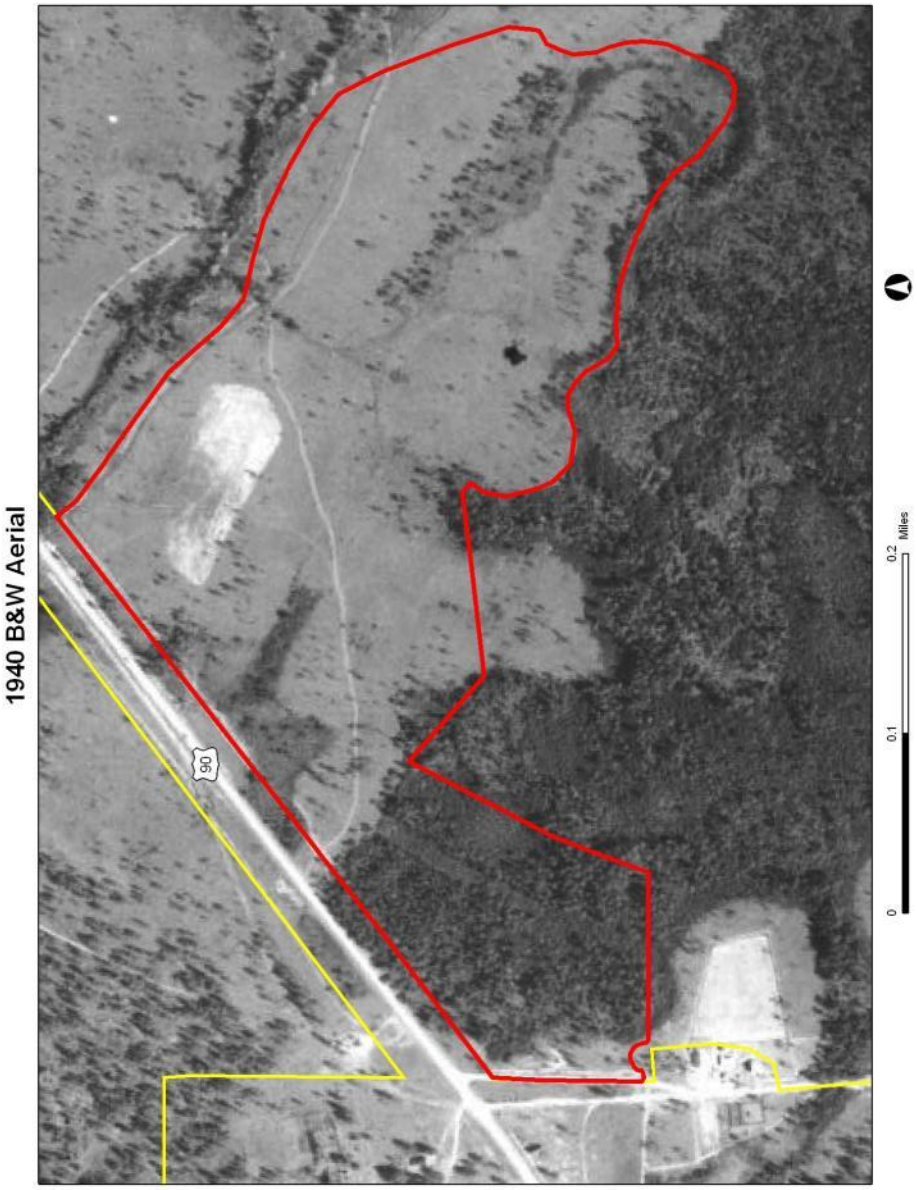
Any additional information requested by the USACE to determine the appropriateness, feasibility, and practicability of this compensatory mitigation project will be provided.

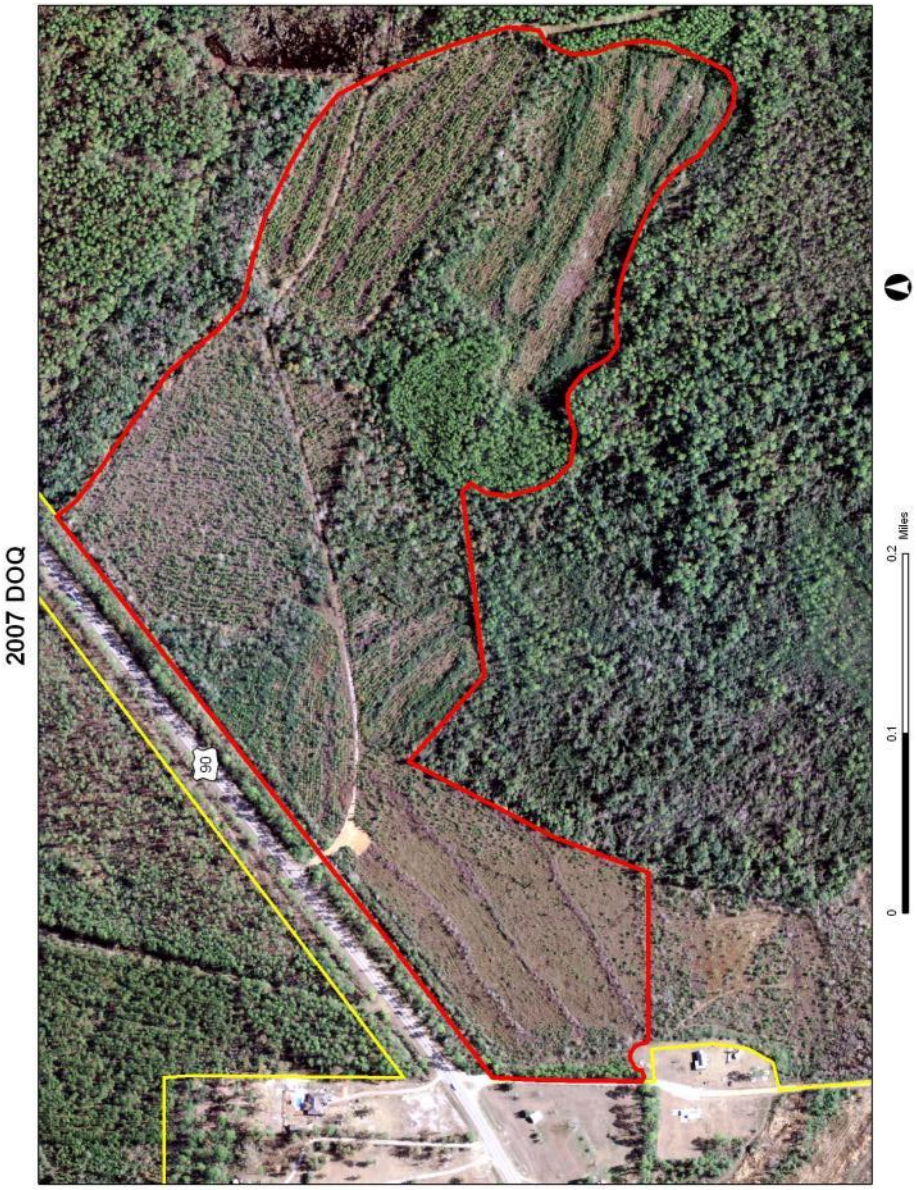
Credit Release (see Final Rule § 332.8(o)(8) & (9)):

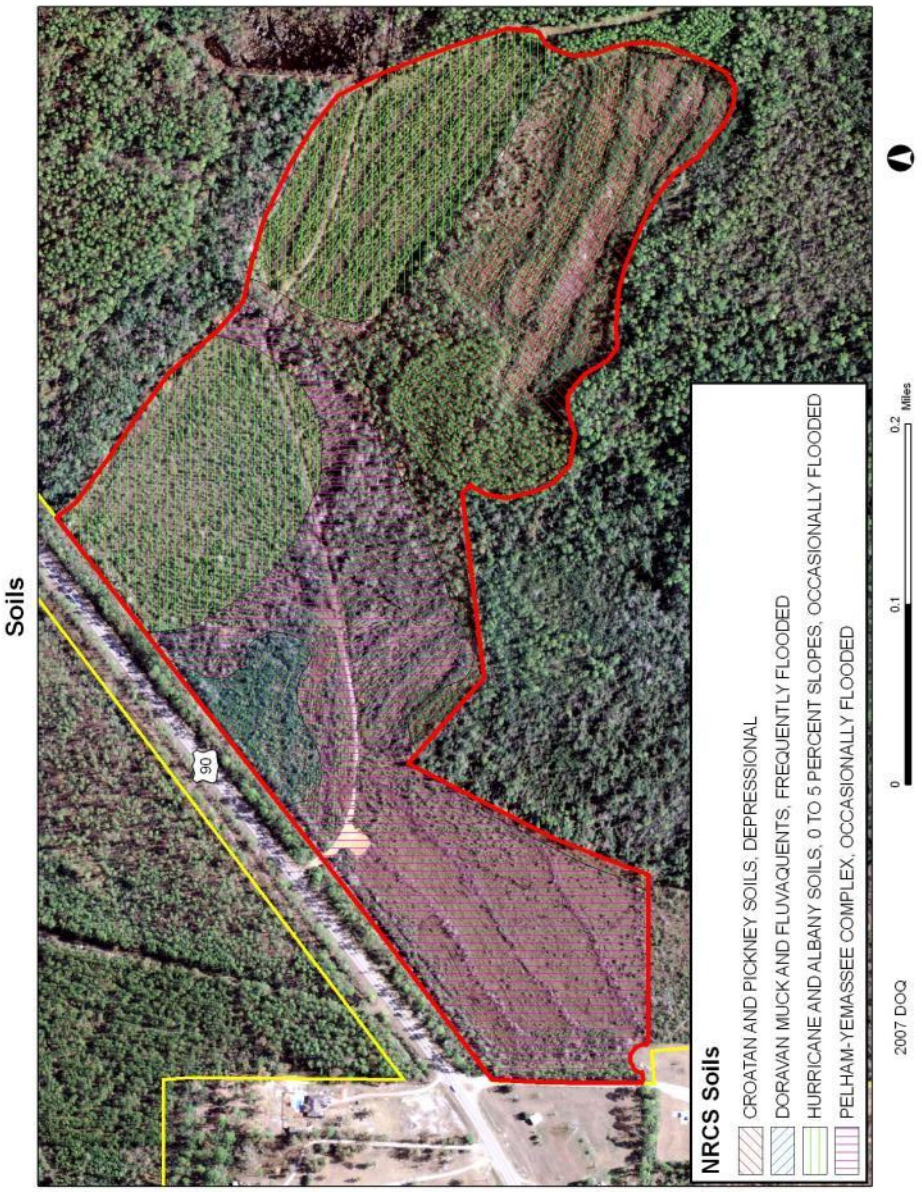
Release of mitigation credits will determined by the USACE in consultation with the IRT.

Location of US 90 Perdido Bridge Impact and Perdido River WMA

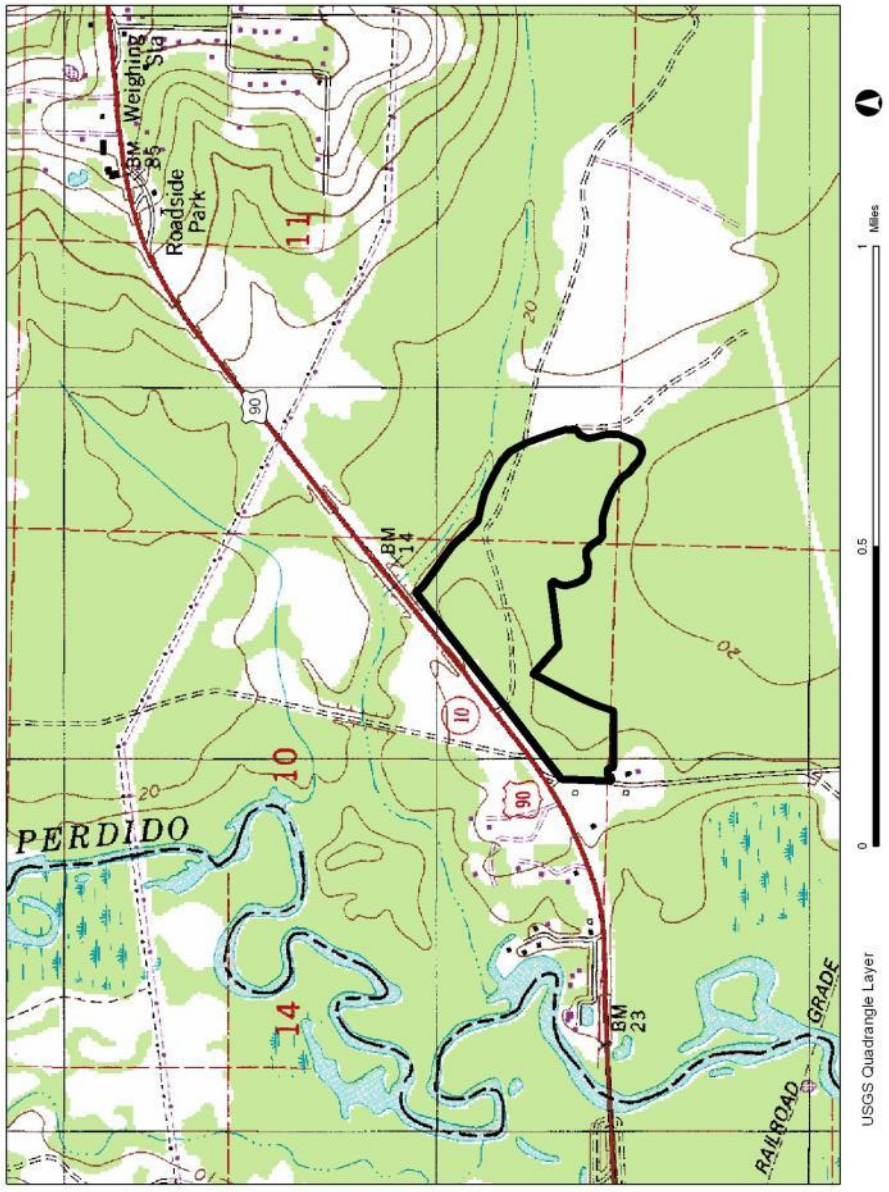

Perdido River WMA - Phase II Mitigation
Perdido River WMA
Perdido River WMA
Mitigation Area
(~67 Acres)
90
TNC Rainwater Preserve
US 90 Perdido River
Bridge Replacement
0
0.25
0.5 Miles
2007 DOQ

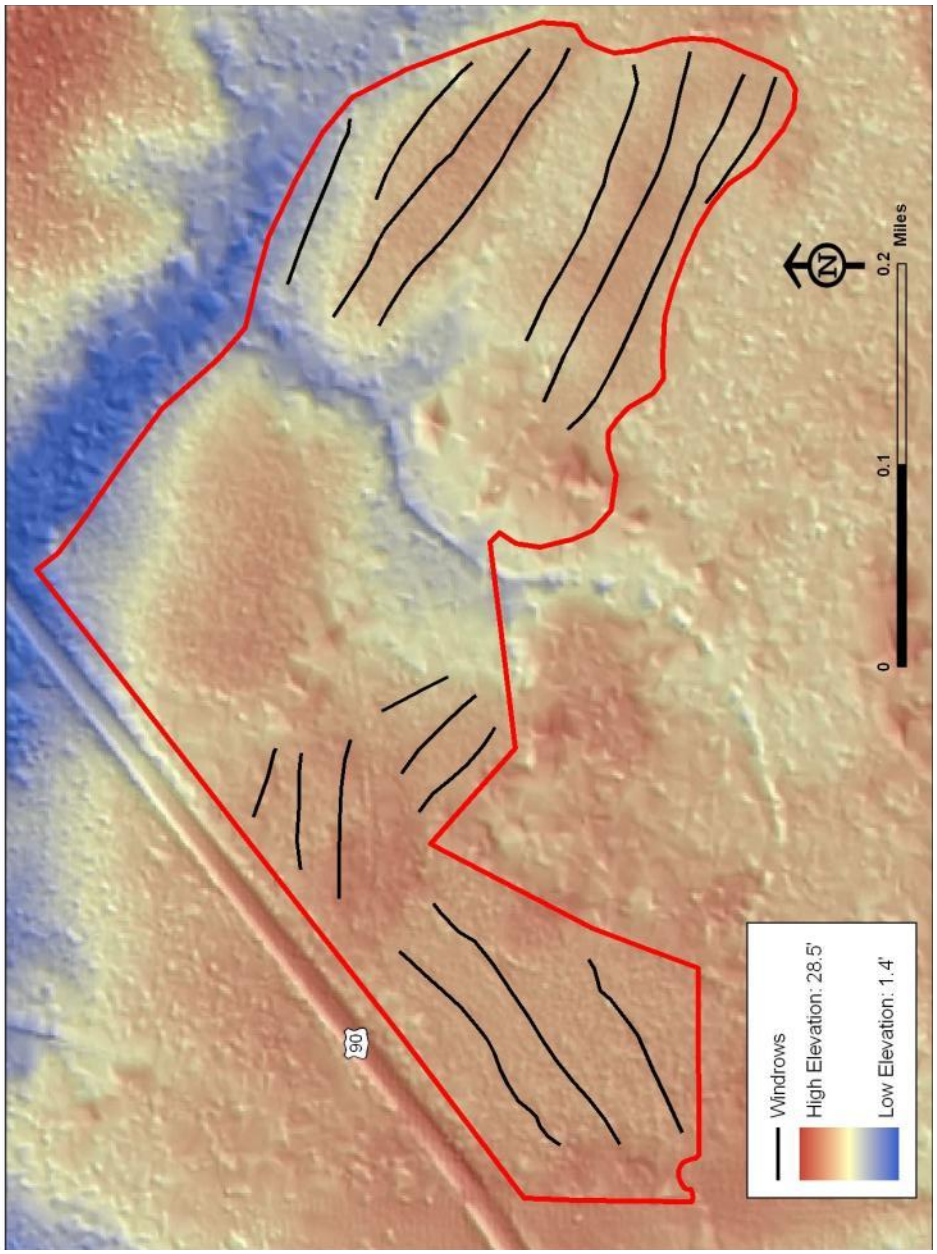

1940 B&W Aerial
90
0
0.1
0.2 Miles

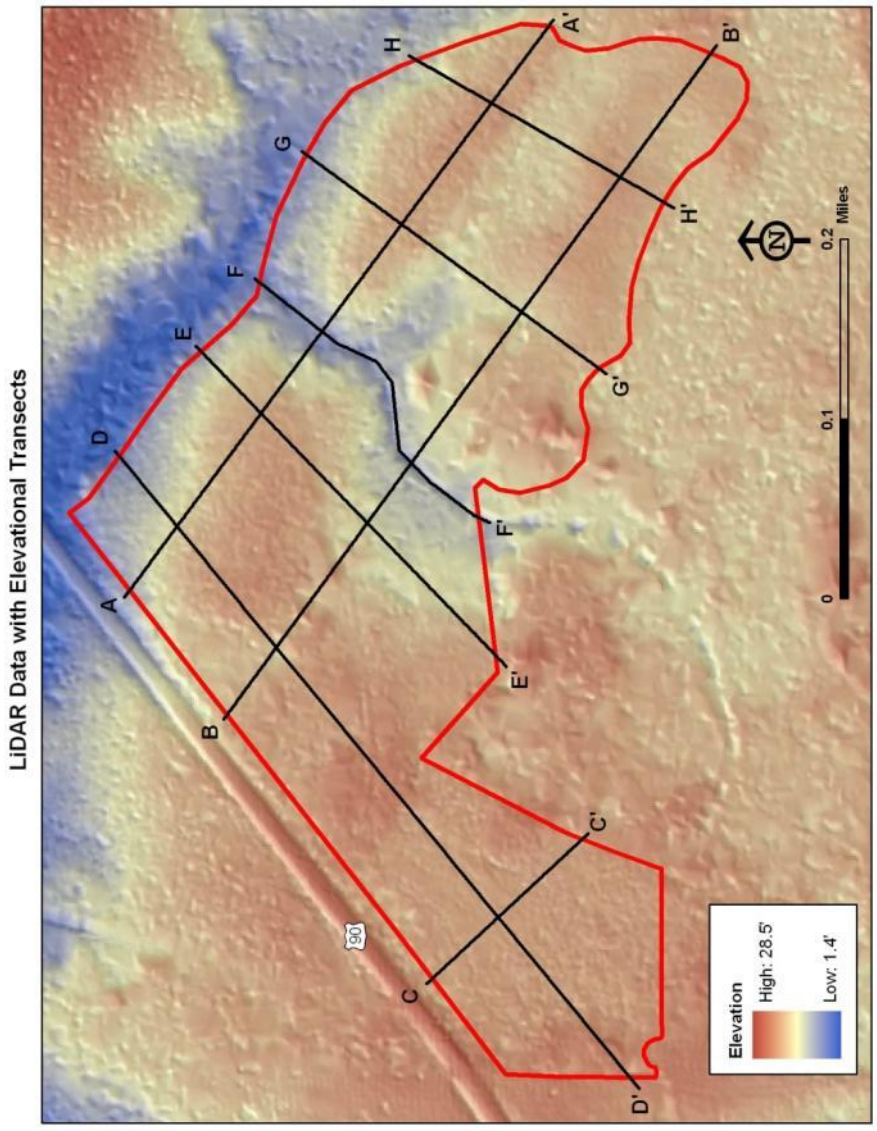

2007 DOQ
90
0
0.1
0.2 Miles

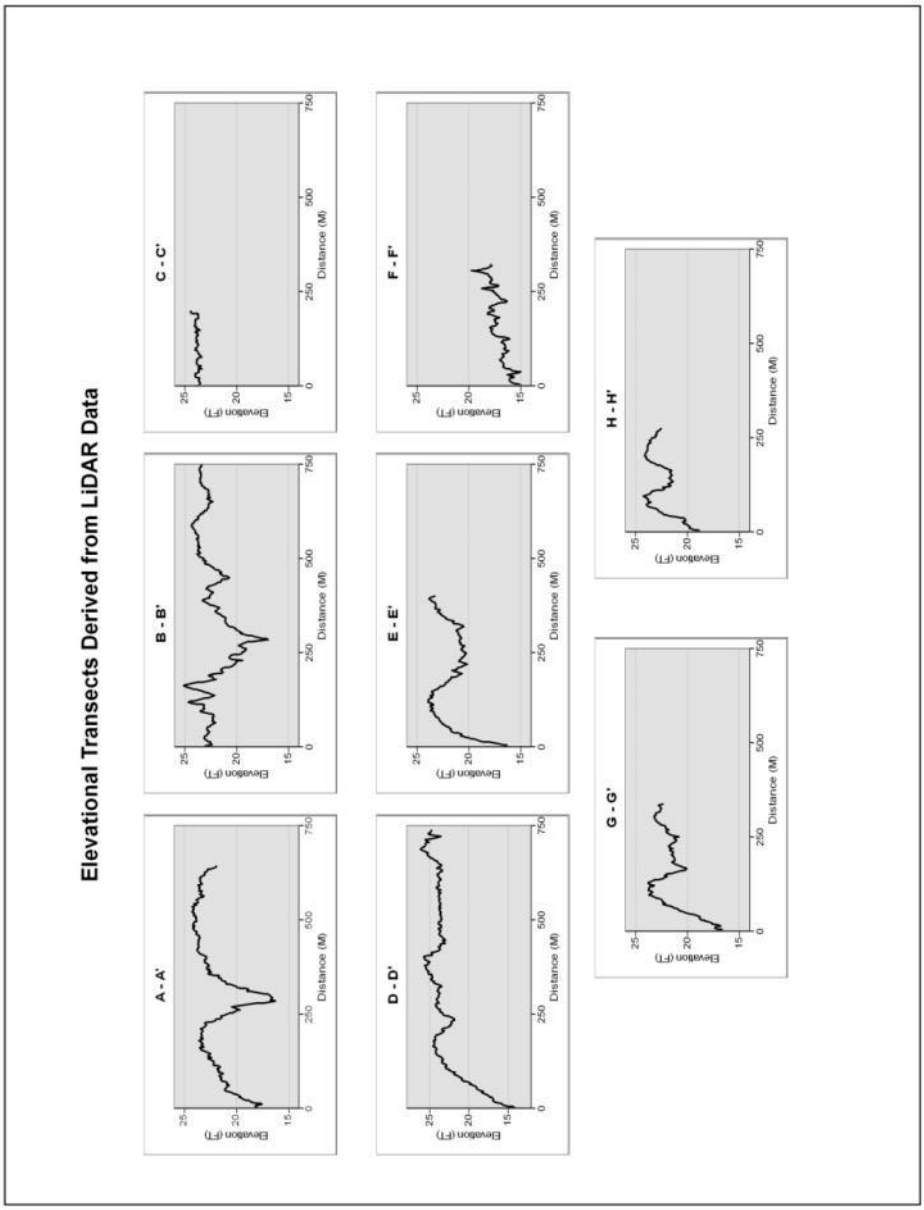

Soils
90
NRCS Soils
CROATAN AND PICKNEY SOILS, DEPRESSIONAL
DORAVAN MUCK AND FLUVAQUENTS, FREQUENTLY FLOODED
HURRICANE AND ALBANY SOILS, 0 TO 5 PERCENT SLOPES, OCCASIONALLY FLOODED
PELHAM-YEMASSEE COMPLEX, OCCASIONALLY FLOODED
0
0.1
0.2
Miles
2007 DOQ

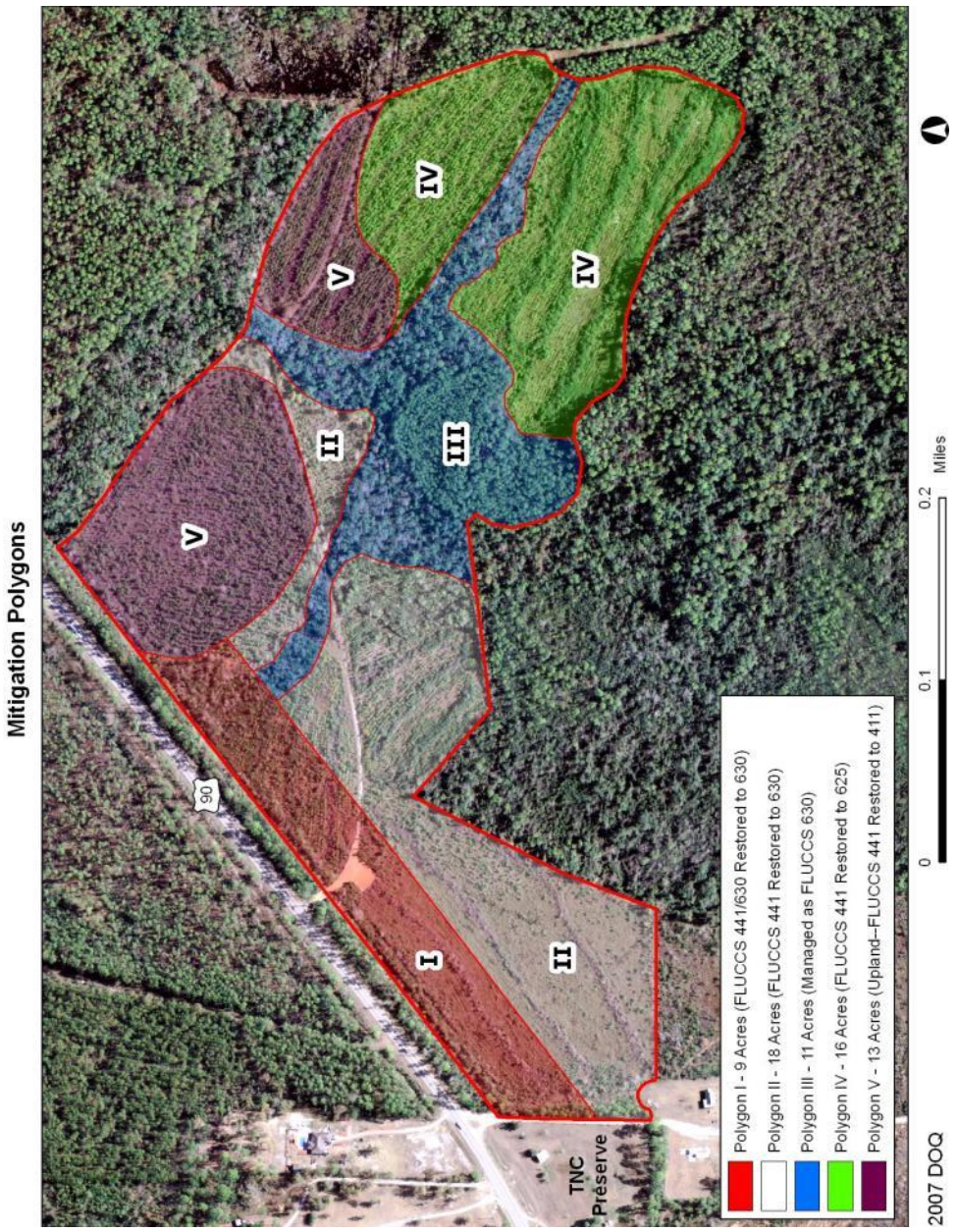
Topography

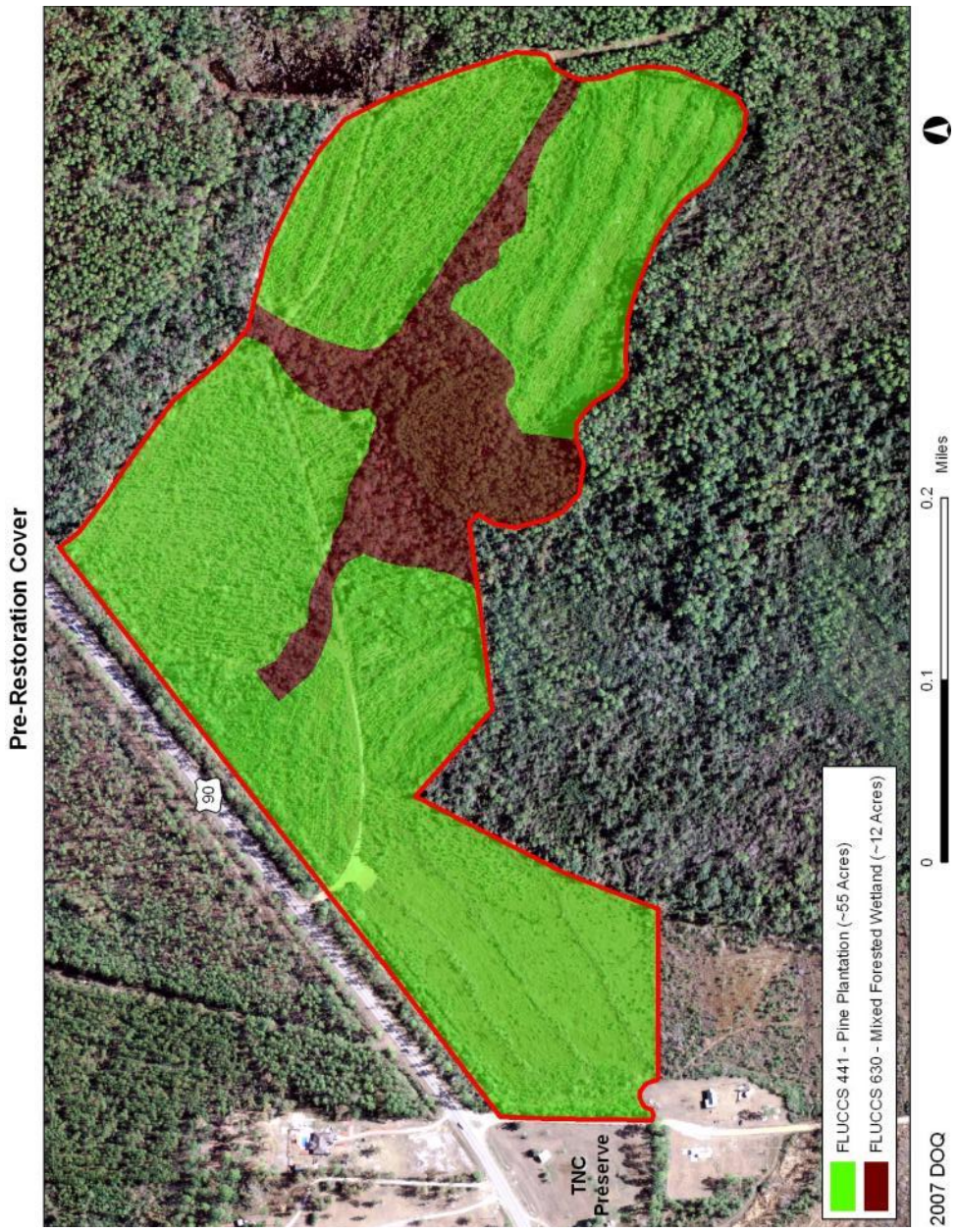

Weighing Sta
BM 85
Roadside Park
11
90
BM 14
10
20
PERDIDO
14
BM 23
RAILROAD GRADE
0
0.5
1 Miles
USGS Quadrangle Layer

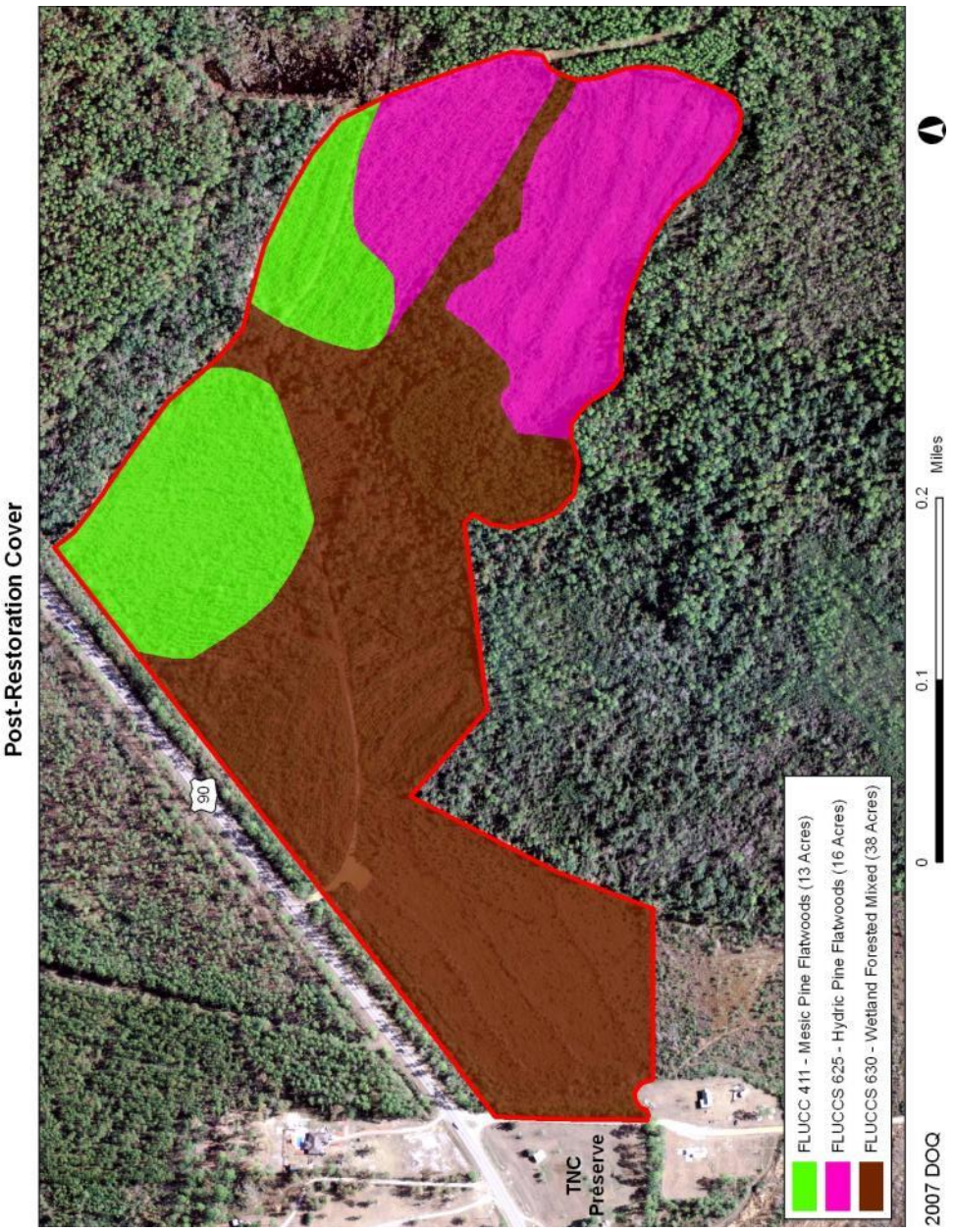

Elevation Data Derived from LiDAR
90
Windrows
High Elevation: 28.5'
Low Elevation: 1.4'
N
0
0.1
0.2
Miles


LiDAR Data with Elevational Transects
A
A'
B
B'
C
C'
D
D'
E
E'
F
F'
G
G'
H
H'
90
Elevation
High: 28.5'
Low: 1.4'
0
0.1
0.2
Miles
N


Elevational Transects Derived from LiDAR Data
A - A'
B - B'
C - C'
D - D'
E - E'
F - F'
G - G'
H - H'
Elevation (FT)
Distance (M)
25
20
15
0
250
500
750


Mitigation Polygons
I
II
III
IV
V
90
TNC Preserve
Polygon I - 9 Acres (FLUCCS 441/630 Restored to 630)
Polygon II - 18 Acres (FLUCCS 441 Restored to 630)
Polygon III - 11 Acres (Managed as FLUCCS 630)
Polygon IV - 16 Acres (FLUCCS 441 Restored to 625)
Polygon V - 13 Acres (Upland--FLUCCS 441 Restored to 411)
0
0.1
0.2
Miles
2007 DOQ


Pre-Restoration Cover
90
TNC
Preserve
FLUCCS 441 - Pine Plantation (~55 Acres)
FLUCCS 630 - Mixed Forested Wetland (~12 Acres)
0
0.1
0.2
Miles
2007 DOQ


Post-Restoration Cover
90
TNC Preserve
FLUCC 411 - Mesic Pine Flatwoods (13 Acres)
FLUCCS 625 - Hydric Pine Flatwoods (16 Acres)
FLUCCS 630 - Wetland Forested Mixed (38 Acres)
0
0.1
0.2
Miles
2007 DOQ

Hydric Pine Flatwoods Restoration Area

Hydric Pine Flatwoods Restoration Area

Forested Mixed Wetlands Enhancement Area

Mesic Pine Flatwoods Enhancement Area

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

Site/Project Name	Application Number	Assessment Area Name or Number
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon I**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 with 630 inclusions (Current); 630 (Post Restoration)	**---**	**Mitigation**	**9 Acres**

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

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

Contiguous to Perdido River wetlands. Polygon is within 300' of US 90.

Assessment area description

Pine Plantation (FLUCCS 411) with inclusions of Forested Mixed Wetlands (FLUCCS 630).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Within Perdido River WMA; adjacent to TNC Rainwater Nature Preserve.	**Typical Habitat**

Functions	Mitigation for previous permit/other historic use
Water quality; protection of recharge areas; floral and faunal habitat.	**None Known**

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)
Deer, possum, raccoon, bob cat, box turtle, spotted skunk, black racer, oak toad, American toad, garter snake, diamond back rattler, cotton mouse, rabbit, squirrel.	**Pineland bog button (LT), yellow fringeless orchid (LE), yellow fringed orchid (LT), white top pitcher plant (LE), gulf coast purple pitcher plant (LT), eastern indigo snake (LT), Florida pine snake (LS), wood stork.**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Deer, rabbit, raccoon.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
USACE / MRT / NWFWMD Staff	**3/24/2008 (date of field visit)**

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
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon I**
Impact or Mitigation	Assessment conducted by:	Assessment date:
Mitigation	**USACE / MRT / NWFWMD**	**3/24/2008**

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	with mit
.500(6)(a) Location and Landscape Support	**Without Mitigation** - A major highway (US 90) impedes wildlife access and movement across the northwest boundary; existing pine plantation within the polygon diminishes value of site to wildlife in surrounding area. **With Mitigation** - Restoration of adjace	6	7
.500(6)(b)Water Environment (N/A for Uplands)	**Without Mitigation** - Pine plantation bedding and wind rows in adjacent polygons and roadside ditching along US 90 make conditions less than optimal. **With Mitigation** - improves with restoration of adjacent polygons.	6	7
.500(6)(c)Community structure Vegetation and/or Benthic Community	**Without Mitigation** - Remains as forested mixed wetlands with encroachment/edge effects of thick shrub layers. **With Mitigation** - Exotic/invasives management implemented; restoration and management of adjacent hydric pine flatwoods and savanna; reduction o	4	8

Score = sum of above scores/30 (if uplands, divide by 20)	w/out mit	with mit
	0.53	0.73

Delta = [with - w/out]
0.20

If preservation as mitigation
Preservation adjustment factor = N/A
Adjusted mitigation delta = N/A

If mitigation / restoration	
Federal Time Lag Factor (25 years) =	**0.7**
Risk factor =	**1.3**

For impact assessment areas
N/A

lygon Acreage = 9	
For mitigation assessment areas	
Mitigation Credits [(Delta / (Time Lag * Risk)) * Acres] =	**2.13**

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

Site/Project Name	Application Number	Assessment Area Name or Number
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon II**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 with 630 inclusions (Current); 630 (Post Restoration)	**---**	**Mitigation**	**18 Acres**

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

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

Contiguous to Perdido River wetlands.

Assessment area description

Pine Plantation (FLUCCS 441).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Within Perdido River WMA; adjacent to TNC Rainwater Nature Preserve.	**Typical Habitat**

Functions	Mitigation for previous permit/other historic use
Water quality; protection of recharge areas; floral and faunal habitat.	**None Known**

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)
Deer, possum, raccoon, bob cat, box turtle, spotted skunk, black racer, oak toad, American toad, garter snake, diamond back rattler, cotton mouse, rabbit, squirrel.	**Pineland bog button (LT), yellow fringeless orchid (LE), yellow fringed orchid (LT), white top pitcher plant (LE), gulf coast purple pitcher plant (LT), eastern indigo snake (LT), Florida pine snake (LS), wood stork.**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Deer, rabbit, raccoon.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
USACE / MRT / NWFWMD Staff	**3/24/2008 (date of field visit)**

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
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon II**
Impact or Mitigation	Assessment conducted by:	Assessment date:
Mitigation	**USACE / MRT / NWFWMD**	**3/24/2008**

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	with mit
.500(6)(a) Location and Landscape Support	**Without Mitigation** - A major highway (US 90) impedes wildlife access and movement across the northwest boundary; existing pine plantation within the polygon diminishes value of site to wildlife in surrounding area. **With Mitigation** - Restoration of adjace	8	9
.500(6)(b)Water Environment (N/A for Uplands)	**Without Mitigation** - Pine plantation bedding and wind rows in adjacent polygons and roadside ditching along US 90 make conditions less than optimal. **With Mitigation** - improves with restoration of adjacent polygons.	6	7
.500(6)(c)Community structure Vegetation and/or Benthic Community	**Without Mitigation** - Remains as forested mixed wetlands with encroachment/edge effects of thick shrub layers. **With Mitigation** - Exotic/invasives management implemented; restoration and management of adjacent hydric pine flatwoods and savanna; reduction o	4	8

Score = sum of above scores/30 (if uplands, divide by 20)	w/out mit	with mit
	0.60	0.80

Delta = [with - w/out]
0.20

If preservation as mitigation
Preservation adjustment factor = N/A
Adjusted mitigation delta = N/A

If mitigation / restoration	
Time Lag Factor (6-10 years) =	**0.7**
Risk factor =	**1.3**

For impact assessment areas
N/A

lygon Acreage = 18	
For mitigation assessment areas	
Mitigation Credits [(Delta / (Time Lag * Risk)) * Acres] =	**4.26**

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

Site/Project Name	Application Number	Assessment Area Name or Number
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon III**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
630 - Forested Mixed Wetlands (Current and Post Restoration)	**---**	**Mitigation**	**11 Acres**

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

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

Contiguous to Perdido River wetlands.

Assessment area description

Primarily Forested Mixed Wetlands (FLUCCS 630).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Within Perdido River WMA; adjacent to TNC Rainwater Nature Preserve.	**Typical Habitat**

Functions	Mitigation for previous permit/other historic use
Water quality; protection of recharge areas; floral and faunal habitat.	**None Known**

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)
Deer, possum, raccoon, bob cat, box turtle, spotted skunk, black racer, oak toad, American toad, garter snake, diamond back rattler, cotton mouse, rabbit, squirrel.	**Pineland bog button (LT), yellow fringeless orchid (LE), yellow fringed orchid (LT), white top pitcher plant (LE), gulf coast purple pitcher plant (LT), eastern indigo snake (LT), Florida pine snake (LS), wood stork.**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Deer, rabbit, raccoon.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
USACE / MRT / NWFWMD Staff	**3/24/2008 (date of field visit)**

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
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon III**
Impact or Mitigation	Assessment conducted by:	Assessment date:
Mitigation	**USACE / MRT / NWFWMD**	**3/24/2008**

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	with mit
.500(6)(a) Location and Landscape Support	**Without Mitigation** - A major highway (US 90) impedes wildlife access and movement across the northwest boundary; existing pine plantation within the polygon diminishes value of site to wildlife in surrounding area. **With Mitigation** - Restoration of adjacent hydric pine flatwoods and savanna increases value to wildlife in surrounding area; FDOT eco-passage provides wildlife access across US 90.	7	8
.500(6)(b)Water Environment (N/A for Uplands)	**Without Mitigation** - Pine plantation bedding and wind rows in adjacent polygons and roadside ditching along US 90 make conditions less than optimal. **With Mitigation** - improves with restoration of adjacent polygons.	8	9
.500(6)(c)Community structure Vegetation and/or Benthic Community	**Without Mitigation** - Remains as forested mixed wetlands with encroachment/edge effects of thick shrub layers. **With Mitigation** - Exotic/invasives management implemented; restoration and management of adjacent hydric pine flatwoods and savanna; reduction of encroaching shrub layers.	7	8

Score = sum of above scores/30 (if uplands, divide by 20)	w/out mit	with mit
	0.73	0.83

Delta = [with - w/out]
0.10

If preservation as mitigation
Preservation adjustment factor = N/A
Adjusted mitigation delta = N/A

If mitigation / restoration	
Federal Time Lag Factor (8 years) =	**0.9**
Risk factor =	**1**

For impact assessment areas
N/A

lygon Acreage = 11	
For mitigation assessment areas	
Mitigation Credits [(Delta / (Time Lag * Risk)) * Acres] =	**1.24**

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

Site/Project Name	Application Number	Assessment Area Name or Number
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon IV**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
441 - Pine Plantation (Current); 625 - Hydric Pine Flatwoods (Restored)	**---**	**Mitigation**	**16 Acres**

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

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

Contiguous to Perdido River wetlands.

Assessment area description

6-year old bedded pine plantation (FLUCCS 441) in hydric conditions; upland vegetation on wind rows.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Within Perdido River WMA; adjacent to TNC Rainwater Nature Preserve.	**Typical Habitat**

Functions	Mitigation for previous permit/other historic use
Water quality; protection of recharge areas; floral and faunal habitat.	**None Known**

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)
Deer, possum, raccoon, bob cat, box turtle, spotted skunk, black racer, oak toad, American toad, garter snake, diamond back rattler, cotton mouse, rabbit, squirrel.	**Pineland bog button (LT), yellow fringeless orchid (LE), yellow fringed orchid (LT), white top pitcher plant (LE), gulf coast purple pitcher plant (LT), eastern indigo snake (LT), Florida pine snake (LS), wood stork, Southern tway blade (LT).**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Deer, rabbit, raccoon, pinewoods bluestem.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
USACE / MRT / NWFWMD Staff	**3/24/2008 (date of field visit)**

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
Perdido River WMA - Phase II Mitigation	**Not Applicable**	**Polygon IV**
Impact or Mitigation	Assessment conducted by:	Assessment date:
Mitigation	**USACE / MRT / NWFWMD**	**3/24/2008**

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	with mit
.500(6)(a) Location and Landscape Support	**Without Mitigation** - A major highway (US 90) impedes wildlife access and movement across the northwest boundary; existing pine plantation within the polygon diminishes value of site to wildlife in surrounding area. **With Mitigation** - Restoration of hydric pine flatwoods increases value to wildlife in surrounding area; FDOT eco-passage provides wildlife access across US 90.	8	9
.500(6)(b)Water Environment (N/A for Uplands)	**Without Mitigation** - Hydrology degraded by bedding, roadside ditching along US 90, and wind rows. **With Mitigation** - Removal of wind rows improves sheetflows.	5	7
.500(6)(c)Community structure Vegetation and/or Benthic Community	**Without Mitigation** - Remains as dense planted pine stand with thick shrub layers; groundcover diversity greatly suppressed. **With Mitigation** - Restored as hydric pine flatwoods with lower pine densities and greater groundcover diversity. Restoration methods may include prescribed fire, mechanical shrub reduction, thinning of pines to not more than 112 trees per acre, planting of wiregrass and possible herbaceous seeding.	4	9

Score = sum of above scores/30 (if uplands, divide by 20)	w/out mit	with mit
	0.57	0.83

Delta = [with - w/out]
0.27

If preservation as mitigation
Preservation adjustment factor = N/A
Adjusted mitigation delta = N/A

If mitigation / restoration	
Federal Time Lag Factor (12 years) =	**0.8**
Risk factor =	**1.3**

For impact assessment areas
N/A

lygon Acreage = 16	
For mitigation assessment areas	
Mitigation Credits [(Delta / (Time Lag * Risk)) * Acres] =	**4.10**

Perdido River WMA Phase II Mitigation
UMAM Credit Assessment
(Derived from UMAM Scores Approved by MRT - 3/08)

DO NOT ENTER DATA ON THIS PAGE
ENTER SCORES ONLY ON INDIVIDUAL POLYGON PAGES

Polygon	Acres	L1	L2	W1	W1	C1	C2	W/Out Score	With Score	Raw Delta	Time Lag	P Factor	Risk	Adjusted Delta	UMAM Credits
I	9	6	7	6	7	4	8	0.53	0.73	0.20	0.68	N/A	1.25	0.24	2.128
II	18	8	9	6	7	4	8	0.60	0.80	0.20	0.68	N/A	1.25	0.24	4.257
III	11	7	8	8	9	7	8	0.73	0.83	0.10	0.89	N/A	1	0.11	1.236
IV	16	8	9	5	7	4	9	0.57	0.83	0.27	0.83	N/A	1.25	0.26	4.096
Uplands	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	67														11.72

L1 = Location and Landscape Support - Without Mitigation
L2 = Location and Landscape Support - With Mitigation
W1 = Water Environment - Without Mitigation
W2 = Water Environment - With Mitigation
C1 = Community Structure - Without Mitigation
C2 = Community Structure - With Mitigation

Raw Delta = w/mit score - without mitigation score
Adjusted Delta = Raw Delta / (Time Lag * Risk)
UMAM Credits = Acres * Adjusted Delta

Species List

Perdido River Water Management Area – Phase II Mitigation Site
March 5, 2008

Table 1. Polygon I & II

Wildlife observed: crayfish chimney, southern cricket frog, deer scat.
Bedded pine with large wind rows and a large amount of sphagnum moss.
Water depth 0-2".

Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Acer rubrum	Red maple	X			
Andropogon glomeratus	Bushy bluestem				X
Carex tenax	Caric sedge				X
Centella asiatica	Centella				X
Clethra alinfolia	Sweet pepper bush		X		
Cliftonia monoplylla	Black titi		X		
Cyrilla racemiflora	Red titi		X		
Dicanthelium spp.	Panic grass				X
Drosera brevifolia	Small sundew				X
Gaylussacia frondosa var. tomentosa	Blue huckleberry		X		
Hypericum exile	Florida sands St. Johns Wort				X
Ilex coriacea	Large gallberry		X		
Ilex glabra	Gall berry		X		
Ilex myrtifolia	Myrtle-leaved holly		X		
Lachnocaulon anceps	White-headed bog buttons				X
Lycopodiella appressa	Southern club-moss				X
Lycopodiella caroliniana	Slender club-moss				X
Lyonia lucida	Fetter bush		X		
Magnolia grandiflora	Bull bay	X			
Magnolia virginiana	Silver bay	X			
Myrica inodorata	Odorless wax myrtle		X		
Persea paulistris	Silk bay	X			
Pinus elliottii	Slash pine	X			
Quercus hemisphaerica	Diamond oak	X			
Rhexia nashii	Maid Marion meadow beauty				X
Scleria sp.	Scleria				X
Serenoa repens	Saw palmetto		X		
Solidago fistulosa	Pine barrens goldenrod				X
Woodwardia virginica	Virginia chain fern				X
Woodwardia areolata	Netted chain fern				X
Vaccinium corymbosum	High bush blueberry		X		
Viola primulifolia	Primrose leaf violet				X
Vitus rotundifolia	Muscadine grape			X	
Xyris sp.	Yellow eyed grass				X

Table 2. Polygon III

Wildlife observed: crayfish chimney**,** southern cricket frog, sphagnum moss.
Water depth 0-6".

Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Acer rubrum	Red maple	X			
Andropogon glomeratus	Bushy bluestem				X
Carex tenax	Caric sedge				X
Clethra alinfolia	Sweet pepper bush		X		
Cliftonia monoplylla	Black titi		X		
Cyrilla racemiflora	Red titi		X		
Dicanthelium spp.	Panic grass				X
Drosera brevifolia	Small sundew				X
Eleocharis vivipara	Viparous spikerush				X
Gaylussacia frondosa var. tomentosa	Blue huckleberry		X		
Hypericum exile	Florida sands St. Johns Wort				X
Hyptis alata	Musky mint				X
Ilex coriacea	Large gallberry		X		
Ilex glabra	Gall berry		X		
Ilex myrtifolia	Myrtle-leaved holly		X		
Lachnocaulon anceps	White-headed bog buttons				X
**Listera australis forma viridis*	Southern tway blade orchid				X
Ludwigia sp.	Seedbox				
Lycopodiella appressa	Southern club-moss				X
Lycopodiella caroliniana	Slender club-moss				X
Lyonia lucida	Fetter bush		X		
Magnolia grandiflora	Bull bay	X			
Magnolia virginiana	Silver bay	X			
Myrica cerifera	Wax myrtle		X		
Myrica inodorata	Odorless wax myrtle		X		
Nyssa sylvatica var. biflora	Swamp tupelo	X			
Osmunda cinnamomea	Cinnamon fern				X
Persea paulistris	Silk bay	X			
Photinia pyrifolia	Red chokeberry		X		
Pinus elliottii	Slash pine	X			
Quercus hemisphaerica	Diamond oak	X			
Rhexia nashii	Maid Marion meadow beauty				X
Rhynchospora capillacea	Wiry Rhynchospora				X
Rubus argutus	Blackberry		X		
Scleria sp.	Scleria				X
Serenoa repens	Saw palmetto		X		
Smilax laurifolia	Catbriar			X	
Solidago fistulosa	Pine barrens goldenrod				X
Taxodium ascendens	Pond cypress	X			
Woodwardia virginica	Virginia chain fern				X
Woodwardia areolata	Netted chain fern				X
Vaccinium corymbosum	High bush blueberry		X		
Viola primulifolia	Primrose leaf violet				X
Vitus rotundifolia	Muscadine grape			X	
Xyris sp.	Yellow eyed grass				X

* State Threatened Species,

Table 3. Polygon IV

Wildlife observed: crayfish chimney, deer scat.
Bedded pine with large wind rows and sphagnum moss.
Water depth 0-4".

Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Acer rubrum	Red maple	X			
Andropogon glomeratus	Bushy bluestem				X
Carex tenax	Caric sedge				X
Cliftonia monoplylla	Black titi		X		
Cyrilla racemiflora	Red titi		X		
Drosera brevifolia	Small sundew				X
Eupatorium capillifolium	Yankee weed				X
Hypericum crux-andreae	St. Andrew's cross				X
Hypericum exile	Florida sands St. Johns Wort				X
Ilex coriacea	Large gallberry		X		
Ilex glabra	Gall berry		X		
Ilex myrtifolia	Myrtle-leaved holly		X		
Ilex vomitoria	Yaupon		X		
Lachnocaulon anceps	White-headed bog buttons				X
Lycopodiella appressa	Southern club-moss				X
Lycopodiella caroliniana	Slender club-moss				X
Lyonia lucida	Fetter bush		X		
Magnolia virginiana	Silver bay	X			
Myrica inodorata	Odorless wax myrtle		X		
Osmunda cinnamomea	Cinnamon fern				X
Persea paulistris	Silk bay	X			
Pinus elliottii	Slash pine	X			
Pluchea sp.	Pluchea				X
Quercus hemisphaerica	Diamond oak	X			
Rhexia nashii	Maid Marion meadow beauty				X
Saccharum giganteum	Giant plume grass				X
Scleria sp.	Scleria				X
Serenoa repens	Saw palmetto		X		
Solidago fistulosa	Pine barrens goldenrod				X
Woodwardia areolata	Netted chain fern				X
Woodwardia virginica	Virginia chain fern				X
Vaccinium corymbosum	High bush blueberry		X		
Viola primulifolia	Primrose leaf violet				X
Vitus rotundifolia	Muscadine grape			X	
Xyris sp.	Yellow eyed grass				X

Table 4. Polygon V

Wildlife observed: deer scat.
Bedded pine with large wind rows.

Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Andropogon glomeratus	Bushy bluestem				X
Cliftonia monoplylla	Black titi		X		
Eupatorium capillifolium	Yankee weed				X
Hypericum crux-andreae	St. Andrew's cross				X
Ilex glabra	Gall berry		X		
Ilex vomitoria	Yaupon		X		
Lachnocaulon anceps	White-headed bog buttons				X
Magnolia grandiflora	Bull bay	X			
Magnolia virginiana	Silver bay	X			
Myrica inodorata	Odorless wax myrtle		X		
Persea borbonia	Red bay	X			
Pinus elliottii	Slash pine	X			
Quercus hemisphaerica	Diamond oak	X			
Rhexia mariana	Pale meadow beauty				X
Serenoa repens	Saw palmetto		X		
Solidago fistulosa	Pine barrens goldenrod				X
Vaccinium corymbosum	High bush blueberry		X		
Viola primulifolia	Primrose leaf violet				X
Vitus rotundifolia	Muscadine grape			X	

Addendum (1/12/2012)

Using adaptive management to ensure restoration of appropriate vegetation communities, the restoration polygons have been modified as follows:

Perdido River WMA (Phase II) - Revised Restoration Polygons