**PERDIDO RIVER WMA – PHASE II MITIGATION SECOND ANNUAL MONITORING REPORT**

**US 90 Escambia County**
**SAJ-2007-5634 IP-AWP Issued 09/19/08**

**Impact:** **US 90 Perdido River Bridge (4.14-acre permanent impact,1-acre temporary impact)**

**Mitigation:** **Perdido River WMA-Phase II**
**Monitoring Date:** **November 5, 2009**

## SCOPE

Replacement of the Perdido River Bridge off US 90 will result in the loss of 4.14 acres of moderate quality bottomland hardwood forested wetlands. The impacts will occur at the Florida/Alabama state lines.

## PROPOSED MITIGATION

To compensate for the loss of wetland function associated with the US 90 bridge replacement forested wetland restoration will occur within the adjacent Perdido River WMA. The restoration plan was reviewed and approved by the Interagency Review Team (IRT). It was determined that restoring 67 acres within the adjacent Perdido River WMA would more than generate the 11.72 UMAM credits needed to offset the wetland impacts associated with the bridge replacement.

### Background:

In 2006, the NWFWMD acquired (fee-simple) 5,456 acres from the International Paper Company (IP) to form the Perdido River Water Management Area (WMA; Figure 1). These lands 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 ~$12,000,000. Most of the funding came from the Florida Forever program, although $480,000 of FDOT mitigation funding was used for acquisition of 220 acres of the IP lands to offset impacts associated with construction of the US 90 Escambia Co. Weigh Station.

### Phase II Mitigation:

This project has implemented the restoration and enhancement ~67acres (Figure 2) of mostly 6-year old bedded pine plantation (loblolly pine planted 2002) to a mixture of ~38 acres of Forested Mixed Wetlands (FLUCCS 630), ~16 acres of Hydric Pine Flatwoods (FLUCCS 625), and ~13 acres of Mesic Pine Flatwoods (FLUCCS 411).

## WORK SCHEDULE

- Removal of extensive windrows, that may be altering the historic hydrology: **Completed in 2009**
- Thinning of pine trees in the flatwoods area to less than 150 trees per acre: **Completed in 2009**
- Single or double drum roller chop of wet flatwoods and upland flatwoods to reduce shrub cover**: Completed in 2009**
- Herbicide treatment of nuisance native shrubs to assist in shrub reduction: **Completed in 2009**
- Annual monitoring (photo-documentation and inspection of mitigation site by a qualified biologist or wetland scientist to estimate survival of planted vegetation and percent cover of any exotic/invasive plant species), if required, for five years after shoreline restoration or duration of permit: **Second annual monitoring complete.**
- Re-introduction of fire through cool season burn: **Burn to be implemented in winter 09/10.**
- Re-planting of hardwood species in bottomland hardwood areas and wire grass in wet flatwood areas: **Winter 09/10-12**
- Additional herbicide treatment of shrubs: **Ongoing, as needed**

## SUCCESS CRITERIA

The project's success criteria are:

-Desired species showing evidence of increasing coverage
-No more than 1% coverage of invasive exotic and 5% nuisance native and non invasive exotic species unless otherwise specified in a management plan
-Increase in appropriate herbaceous, shrub and/or tree species
-Kind and total coverage of species appropriate for management goals and target natural community
-Kind and total coverage of tree species appropriate for management goals and target natural community

The monitoring completed on November 5, 2009 indicates compliance with all success criteria. The appended field form provides a listing of the observed species and general site observations related to the success criteria.

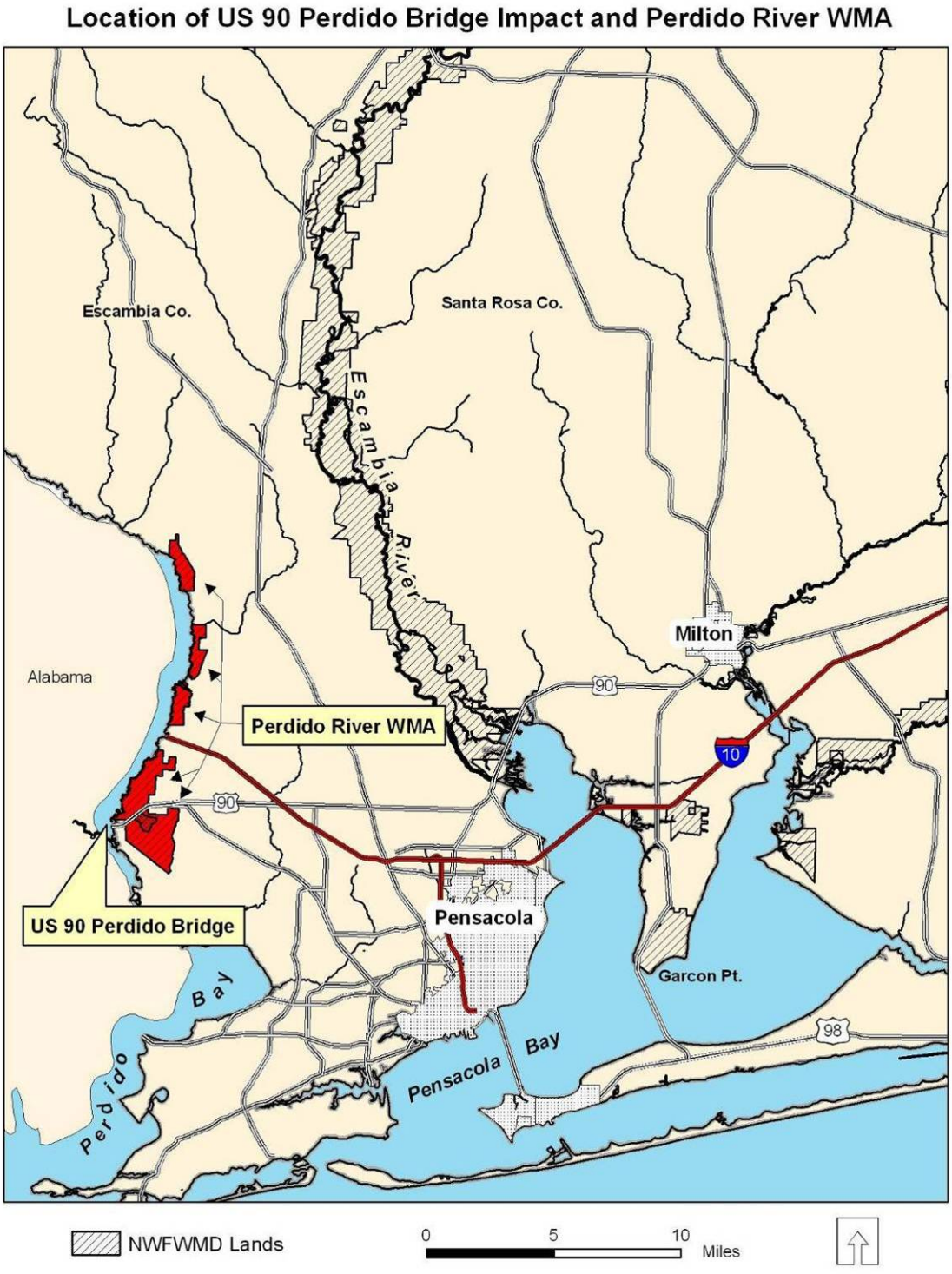


Figure 1: Location of Perdido River WMA and Impact

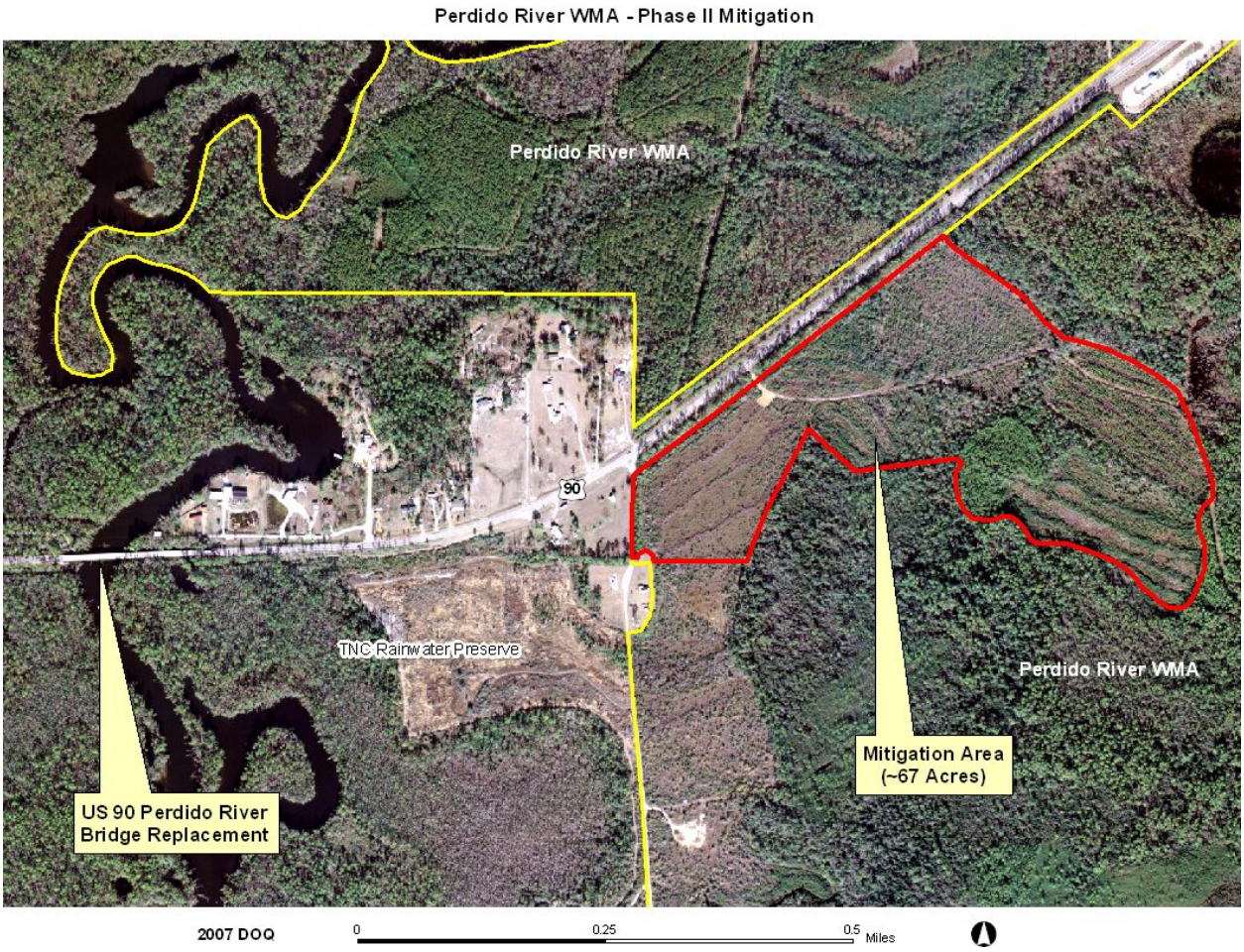


Figure 2: Impact Site and Mitigation Site

Forested Mixed Wetlands Restoration Area

Hydric Pine Flatwoods Restoration Area

Forested Mixed Wetlands Enhancement Area

Forested Mixed Wetlands Enhancement Area

Mesic Pine Flatwoods Enhancement Area

*Sarracenia rosea* in Area III, Forested Mixed Wetlands Enhancement

| **Site Inspection Field Form** | |
|---|---|
| Project: Perdido River | Date: 11/05/09 |
| Name(s) of Data Collectors: Ann Redmond | Weather: cool, clear, slight breeze |
| Environmental Description: Photo #'s | |
| Polygon: GPS Location: Time: | |

**Qualitative Assessment**
(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

**On at least a yearly basis, the site will be inspected as follows:**
A: Perimeter for signs of trespassing, fencing and signage integrity and infestation by exotic or nuisance vegetation;

Site is open to public (gate open) October-April. No signs of vandalism.

B: Internal Roads (Both public and maintenance) for signs of dumping or trespassing, erosion, bridges and road integrity, and exotic or nuisance species infestations;

Roads fine with a couple of soft spots. Drove very far on easternmost road beyond the mitigation site.

C: All construction areas for stabilization and re-vegetation, structure, operation, and integrity;

Area I W: Recovering well, good recruitment
Area I E: Recovering well, good recruitment
Area II: Soil moist, sedges and woodies, good recruitment
Area III: Recovering well, good recruitment
Area IV: Recovering well, good recruitment
Area IV southern: windrows freshly done and not yet re-vegetated; rest is partially vegetated, good recruitment
Area V: Recovering well, good recruitment

D: Representative polygons for each UMAM community for fuel load, exotic or nuisance species, planted material survival, groundcover, and shrub condition.

Exotic & nuisance species are not an issue at this site. Overall, site is recovering well. Plant diversity is good and appropriate to the site.

Area I W: wiry *Rhynchospora* bog with sphagnum and assorted friends
Area I E: Only recently worked, so not much recovery time yet; soil moist, sedges and woodies coming back, plus others
Area II: Only recently worked, so not much recovery time yet; soil moist, sedges and woodies coming back, plus others
Area III: inundated with clear, shallow water; typical of seepage, sphagnum ground cover is common
Area IV: trending to success; planted pines are intermittently alive and dead (which is good)
Area IV southern: wind-rows freshly leveled and not yet re-vegetated; rest is partially vegetated
Area V: only slightly drier than IV

| Vegetation Assessment Field Form Qualitative Assessment-Perdido River | |
|---|---|
| Project: Date: 11/5/09 | |
| Name(s) of Data Collectors: Ann Redmond | Weather: cool, clear, slight breeze |
| Environmental Description: Photo #'s | |
| Polygon: GPS Location: | Time: afternoon |
| Nuisance Species: NA | Fuel Load: Appropriate, not too heavy |
| Wildlife Observations: Water depth: Is the community observed along the walk path representative of the community being measured? To what degree is the restoration in this area trending towards success? Potential Problems and solutions: | |

| ***Scientific Name*** | **Common Name** | **Polygon I: 630** | **Polygon II: 630** | **Polygon III: 630** | **Polygon IV: 625** | **Polygon V: 411** |
|---|---|---|---|---|---|---|
| *Acer rubrum* | Red maple | X | X | X | X | |
| *Andropogon virginicus* | Broomsedge bluestem | | X | X | | |
| *Andropogon glomeratus* | Bushy bluestem | X | X | X | X | X |
| *Aster dumosus* | Rice button aster | | X | | | |
| *Bidens mitis* | Smallfruit beggarticks | X | X | X | X | |
| *Carex longii* | Long's sedge | | X | | | |
| *Carex tenax* | Caric sedge | X | X | X | X | |
| *Clethra alinfolia* | Sweet pepper bush | X | X | X | | |
| *Cliftonia monoplylla* | Black titi | X | X | X | X | X |
| *Cyperus croceus* | Baldwin's flatsedge | | X | | | |
| *Cyperus polystachyos* | Manyspike flatsedge | | X | | | |
| *Cyperus retrorsus* | Pine barren flatsedge | | X | | | |
| *Cyrilla racemiflora* | Red titi | X | X | X | X | |
| *Dicanthelium* spp. | Panic grass | X | X | X | | |
| *Drosera brevifolia* | Small sundew | X | X | X | X | |
| *Eleocharis* sp. (possibly *E. obtusa*) | Spikerush | X | | | | |
| *Eleocharis vivipara* | Viparous spikerush | | | X | | |
| *Eriocaulon decangulare* | Tenangle pipewort | | X | X | | |
| *Eupatorium album* | White thoroughwort | | | X | X | |
| *Eupatorium capillifolium* | Yankee weed | | X | | X | X |
| *Eupatorium* sp. | Thoroughwort | X | X | | X | X |
| *Euthamia caroliniana* | Slender goldentop | | X | | | |
| *Fimbristylis autumnalis* | Slender fimbry | | X | | | |
| *Gaylussacia frondosa* var. *tomentosa* | Blue huckleberry | X | X | X | | |
| *Hydrocotyle* | Marshpennywort | X | | | | |
| *Hypericum brachyphyllum* | Coastal plain St. Johns-wort | | | X | X | |
| *Hypericum cistifolium* | Roundpod St. Johns-wort | | X | X | X | |
| *Hypericum tetrapetalum* | Fourpetal St. Johns-wort | | X | | | |
| *Hypericum crux-andreae* | St. Andrew's cross | | | | X | X |
| *Hypericum exile* | Florida sands St. Johns Wort | X | X | X | X | |
| *Hyptis alata* | Musky mint | | X | X | | |
| *Ilex coriacea* | Large gallberry | X | X | X | X | |
| *Ilex glabra* | Gall berry | X | X | X | X | X |
| *Ilex myrtifolia* | Myrtle-leaved holly | X | X | X | X | |
| *Ilex vomitoria* | Yaupon | | | X | X | X |
| *Juncus repens* | Lesser creeping rush | | | X | X | |
| *Juncus marginatus* | Grassleaf rush | | X | | | |
| *Lachnanthes caroliana* | Carolina redroot | X | X | X | ? | |
| *Lachnocaulon anceps* | White-headed bog buttons | X | X | X | X | X |
| *Listera australis forma viridis** | Southern tway blade orchid | | | X | | |
| *Ludwigia* sp. | Seedbox | | | | | |

| *Scientific Name* | Common Name | Polygon I: 630 | Polygon II: 630 | Polygon III: 630 | Polygon IV: 625 | Polygon V: 411 |
|---|---|---|---|---|---|---|
| *Lycopodiella appressa* | Southern club-moss | X | X | X | X | |
| *Lycopodiella caroliniana* | Slender club-moss | X | X | X | X | |
| *Lyonia lucida* | Fetter bush | X | X | X | X | |
| *Magnolia grandiflora* | Bull bay | X | X | X | | X |
| *Magnolia virginiana* | Silver bay | X | X | X | X | X |
| *Myrica cerifera* | Wax myrtle | | X | X | X | |
| *Myrica inodorata* | Odorless wax myrtle | X | X | X | X | X |
| *Nyssa sylvatica* var. *biflora* | Swamp tupelo | | | X | | |
| *Osmunda cinnamomea* | Cinnamon fern | | X | X | X | |
| *Osmunda regalis* | Royal fern | | | | X | |
| *Panicum longifolium* | Panic grass | | | X | | |
| *Panicum verrucosum* | Warty panic grass | | X | | X | X |
| *Panicum virgatum* | Switchgrass | | | X | X | |
| *Persea borbonia* | Red bay | | | | | X |
| *Persea paulistris* | Silk bay | X | X | X | X | |
| *Photinia pyrifolia* | Red chokeberry | | | X | | |
| *Pinus elliottii* | Slash pine | X | X | X | X | X |
| *Pluchea* sp. | Pluchea | X | X | X | X | |
| *Pteridium aquilinum* var. *pseudocaudatum* | Western brackenfern | | X | | | |
| *Quercus hemisphaerica* | Diamond oak | X | X | X | X | X |
| *Quercus nigra* | Water oak | | | X | | |
| *Rhexia mariana* | Maryland meadowbeauty | | | X | X | |
| *Rhexia* sp. | Meadowbeauty | | | | X | |
| *Rhexia* sp. 2 | Meadowbeauty | | X | | X | |
| *Rhexia mariana* | Pale meadow beauty | | | | | X |
| *Rhexia nashii* | Maid Marion meadow beauty | X | X | X | X | |
| *Rhus* sp. | Sumac | | | | | X |
| *Rhynchospora capillacea* | Wiry rhynchospora | X | X | X | X | |
| *Rhynchospora cephalantha* | Bunched beaksedge | X | | X | | |
| *Rhynchospora nudata* | Beaksedge | X | | | | |
| *Rhynchospora* sp. | Naked beaksedge? | | | | X | |
| *Rubus argutus* | Blackberry | | | X | X | |
| *Saccharum giganteum* | Giant plume grass | | | | X | |
| *Sagittaria graminea* | Grassy arrowhead | X | | | | |
| *Sarracenia rosea* | Purple pitcherplant | | X | | | |
| *Scleria* sp. | Scleria | X | X | X | X | |
| *Serenoa repens* | Saw palmetto | X | X | X | X | X |
| *Smilax laurifolia* | Catbriar | X | X | X | X | X |
| *Solidago fistulosa* | Pine barrens goldenrod | X | X | X | X | X |
| *Sphagnum* sp. | Sphagnum | X | X | X | X | X |
| *Taxodium ascendens* | Pond cypress | | | X | | |
| Unknown green ground moss | Unknown green ground moss | X | X | | X | X |
| *Vaccinium elliottii* | Elliott's blueberry | | | X | X | |
| *Vaccinium corymbosum* | High bush blueberry | X | X | X | X | X |
| *Viola primulifolia* | Primrose leaf violet | X | X | X | X | X |
| *Vitus rotundifolia* | Muscadine grape | X | X | X | X | X |
| *Woodwardia areolata* | Netted chain fern | | | X | X | |
| *Woodwardia virginica* | Virginia chain fern | X | X | X | X | |
| *Xyris* sp. | Yellow eyed grass | X | X | X | X | |

Species Presence:
X: March 2008
X: December 2009
X: Both Monitoring Events