

PLUM CREEK RESTORATION ANNUAL MONITORING REPORT (2009)
SAJ-2005-8649 IP-DEB (8/10/06), SAJ-2006-4627 IP-DEB (8/24/06)

Impacts: SR 79 Open Creek Bridge; Washington Co.; NW26; 1.82-acre impact; USACE Permit SAJ-2005-8649 IP-DEB issued (8/10/06)
SR 79 Holmes Creek Bridge; Washington Co.; NW27; 8.04-acre impact per FDOT Inventory; USACE Public Notice SAJ-2006-4627 IP-DEB (8/24/06)

Mitigation: Plum Creek
Monitoring Date: November 5, 2009

SCOPE

Bridge repair and construction at two sites have resulted in impacts that are being mitigated at this site. Plum Creek is a 130-acre tract located approximately 600 feet north of Holmes Creek in Washington Co., and is contiguous with extensive NFWMD land holdings. In consultation with USACE, it is estimated that 12.07 credits will be obtained from implementation of this mitigation effort.

PROPOSED MITIGATION

The uplands on this site consist of FLUCCS 441 – Coniferous Plantation [Polygon D, E & F] (i.e., mature, bedded, slash pine plantation with a moderately diverse understory), whereas the wetlands are characterized as FLUCCS 630 – Mixed Forested Wetlands [Polygon A & C] (~30 acres), FLUCCS 640 – Non-Forested Wetlands [Polygon B] (~30 acres), and a small, previously undelineated connection consisting of FLUCCS 625 – Hydric Pine Flatwoods [Polygon D] (0.88 acre). The existing forested wetlands are generally of high quality. Historic aerials demonstrate that the currently non-forested wetlands once had a mature, closed-canopy wetland forest. Beaver activity (damming and deforestation) and possible timber harvesting likely caused this loss of forested habitat. Wetland and upland polygons on the attached maps were delineated from 2004 DOQs and then overlaid on the 1955 aerial. Based on historic Palmer Hydrologic Drought Index data, the Plum Creek parcel was experiencing extreme drought when the 1955 aerials were taken, thus obscuring portions of wetland areas in the image.

Conversion of the upland forested buffers to pine plantation and hydrologic alteration from beaver activity/timber removal are the primary impacts to the natural vegetation communities of this site. Regional development pressures (e.g., the planned Panama City airport, anticipated four-laning of nearby SR 79, large-scale housing projects proposed for the nearby town of Vernon, etc.) and expected population growth suggest a high likelihood that without preservation this site will be developed.

The goal of this project is the acquisition, preservation and restoration of the 130-acre Plum Creek tract. Approximately 70 acres pine plantation will be restored to native pine forest (FLUCCS 411), coupled with preservation and restoration/enhancement of approximately 60 acres of forested wetlands. The restored site will be owned and managed in perpetuity for ecological integrity by the NFWMD. The connectivity of this parcel to extensive NFWMD

holdings along the Holmes Creek floodplain greatly increases its restoration and preservation value.

Restoration Activities

In the native pine forest (FLUCCS 411) areas of the site, restoration has been started with tree thinning in fall 2009. Actual restoration techniques implemented will be dependent upon site-specific conditions and adaptive management. In both upland and wetland polygons, management strategies for nuisance and exotic species will be implemented as necessary. Forested wetland areas (FLUCCS 625 & 630) are being preserved in their existing condition, whereas the impacted non-forested wetlands will be hydrologically restored and planted with appropriate species, including cypress and tupelo. Hydrologic restoration of the site is being accomplished through removal of an extensive network of beaver dams and further hydrologic enhancement downstream. A properly sized culvert will replace an improvised culvert on NFWMD lands ~500 feet south of the Plum Creek property boundary. Acquisition of this tract has eliminated the high probability of future rural/residential development and ensures its perpetual preservation.

The 2009 monitoring event took place on November 5, 2009. There were no signs of trespassing or abuse. Site was clear along roads. There were no signs of exotics or nuisance vegetation. Wetlands are in an appropriate and healthy condition relative to the mitigation targets. The uplands are in a transitional phase from silvicultural operations to native community. They need to be planted in long leaf pine, wiregrass, and then have a prescribed burn.

WORK SCHEDULE

Plantation thinning: **Completed Fall 2009**

Annual monitoring performed: **completed 11/05/09**

Site purchase: **completed December 2009**

Beaver control and culvert placement: **June 2010**

Replanting: **Proposed Winter 2010/2011**

SUCCESS CRITERIA

The project success criteria are:

1. No observable decline in vegetation community health.
2. Species diversity is, at a minimum, stable in each wetland polygon.
3. No more than 1% coverage of invasive exotics and 5% coverage of nuisance native and non-invasive exotic species.
4. No more than 200 pine (longleaf or slash) trees per acre in upland areas.
5. Not less than 300 trees per acre in Polygon B (cypress, tupelo or other species).

Based on the November 2009 monitoring event, the success criteria are being met to date and the project is trending toward success. Subsequent monitoring events will address the criteria annually as more work is completed.

Figure 1. Location Map

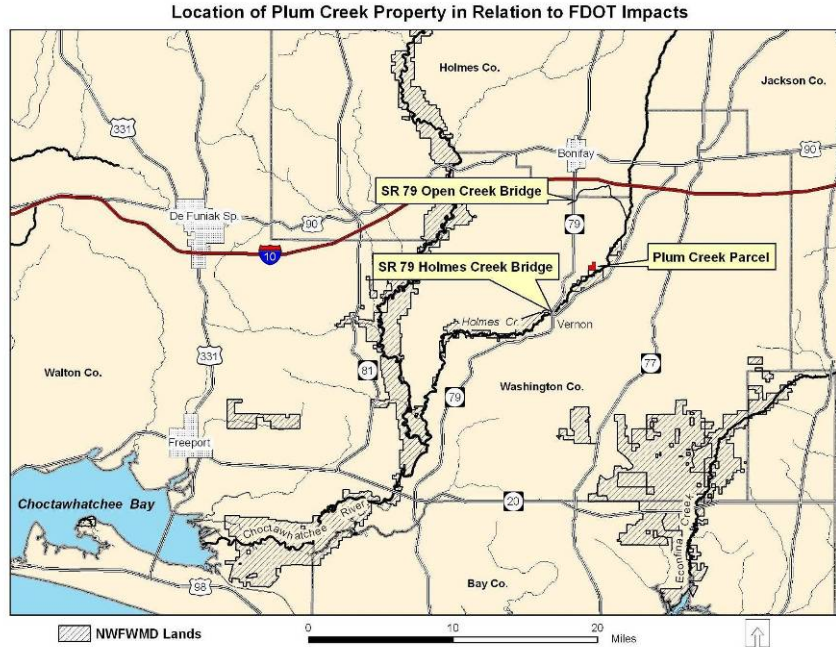


Figure 2. Plum creek restoration plan polygons.



Figure 3. Polygon A



Figure 4. Polygon B



Figure 5. Polygon E/A edge



Figure 6. Polygon E



Table 1. Plant Species observed, 2009.

<i>Scientific Name</i>	Common Name	Polygon A Site 1	Polygon A Site 2	Polygon B Site 3	Polygon B Site 4	Polygon D Site 5
<i>Andropogon virginicus</i>	Broom sedge					X
<i>Aristida stricta</i> var. <i>beyrichiana</i>	Wiregrass					
<i>Arundinaria gigantea</i>	Switchcane	X	X	X	X	X
<i>Asclepias humistrata</i>	Milkweed					
<i>Asimina angustifolia</i>	Slimb-leaved paw paw					
<i>Aster reticulatus</i>	Pinewood aster					
<i>Baptisia lanceolata</i>	Pineland wild indigo					
<i>Berlandiera pumila</i>	Green eyes					
<i>Callicarpa americana</i>	Beauty berry					X
<i>Carex elliotii</i>	Elliot's sedge	X	X	X		
<i>Clethra alinifolia</i>	Sweet pepper bush	X	X	X	X	X
<i>Cliftonia monophylla</i>	Black ti ti	X	X	X	X	X
<i>Cnidocolus stimulosus</i>	Tread softly					
<i>Cornus florida</i>	Flowering dogwood					
<i>Cyrilla racemiflora</i>	Red ti ti					
<i>Dalea pinnata</i>	Summer-farewell					
<i>Decodon verticillatus</i>	Swamp loosestrife					
<i>Dicanthelium</i> spp.	Panic grass	X	X	X	X	X
<i>Diospyros virginiana</i>	Persimmon					
<i>Dulichium arundinaceum</i>	Three-way sedge					
<i>Elephantopus carolinianus</i>	Carolina elephant's foot					
<i>Eriogonum tomentosum</i>	Wild buckwheat					
<i>Eriocaulon decangulare</i>	Pipewort			X	X	
<i>Eupatorium compositifolium</i>	Dog fennel	X	X	X	X	X
<i>Gelsemium sempervirens</i>	Yellow jessamine					X
<i>Gnaphalium pensylvanicum</i>	Cudweed					
<i>Hibiscus aculeatus</i>	Comfort root					
<i>Hypericum gentinoides</i>	Pineweed	X		X		
<i>Ilex coriacea</i>	Large gallberry	X	X	X	X	
<i>Ilex glabra</i>	Gall berry					X
<i>Ilex opaca</i>	American holly					
<i>Ilex vomitoria</i>	Yaupon					
<i>Itea virginica</i>	Virginia willow			X	X	
<i>Juncus effusus</i>	Soft rush	X	X	X		
<i>Juncus</i> sp.	Rush	X	X	X		X
<i>Lachnanthes caroliana</i>	Red root	X	X	X	X	X
<i>Leucothoe axillaris</i>	Coastal dog hobble	X	X		X	
<i>Leucothoe racemosa</i>	Swamp dog hobble	X	X	X		
<i>Liquidambar styraciflua</i>	Sweet gum	X	X	X	X	X
<i>Ludwigia</i> sp.	Primrose willow	X	X	X	X	X
<i>Lycopus amplexens</i>	Clasping waterhorehound					
<i>Lyonia lucida</i>	Fetterbush	X	X	X	X	X
<i>Magnolia grandiflora</i>	Southern magnolia					
<i>Magnolia virginiana</i>	Silver bay	X	X			X

<i>Scientific Name</i>	Common Name	Polygon A Site 1	Polygon A Site 2	Polygon B Site 3	Polygon B Site 4	Polygon D Site 5
<i>Myrica cerifera</i>	Wax myrtle	X	X	X	X	X
<i>Myrica inodorata</i>	Odorless wax myrtle	X	X			X
<i>Nymphaea odorata</i>	Fragrant water lily			X	X	
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Black gum					
<i>Osmanthus americanus</i>	Wild olive					
<i>Osmunda regalis</i>	Royal fern					
<i>Persea borbonia</i>	Red bay	X	X	X	X	X
<i>Persea paulistris</i>	Silk bay	X	X	X	X	X
<i>Pinus elliotii</i>	Slash pine	X	X	X	X	X
<i>Pinus palustris</i>	Longleaf pine					
<i>Pinus taeda</i>	Loblolly pine			X	X	
<i>Polygala nana</i>	Wild bachelor's button			X	X	
<i>Prunus angustifolia</i>	Chickasaw plum					
<i>Prunus serotina</i>	Black cherry					
<i>Pteridium aquilinum</i>	Bracken fern					
<i>Quercus falcata</i>	Red oak					
<i>Quercus geminata</i>	Sand live oak					
<i>Quercus hemisphaerica</i>	Laurel oak	X	X	X	X	
<i>Quercus nigra</i>	Water oak	X	X	X	X	
<i>Rhododendron viscosum</i>	Swamp azalea			X	X	
<i>Rhus copallinum</i>	Winged sumac					
<i>Rubus cuneifolius</i>	Sand blackberry			X	X	X
<i>Schrankia microphylla</i>	Sensitive briar					
<i>Serenoa repens</i>	Saw palmetto					
<i>Smilax glauca</i>	Greenbriar					
<i>Smilax</i> sp.	Greenbriar	X	X	X	X	X
<i>Sphagnum</i> sp	Sphagnum moss	X	X	X	X	
<i>Taxodium ascendens</i>	Pond cypress	X	X	X	X	
<i>Toxicodendron radicans</i>	Poison ivy	X	X			X
<i>Triadenum virginicum</i>	Marsh St. John's wort					
<i>Trichostema dichotomum</i>	Blue curls					
<i>Vaccinium arboreum</i>	Sparkleberry					
<i>Vaccinium corymbosum</i>	Highbush blueberry	X		X	X	X
<i>Vitis rotundifolia</i>	Muscadine grape	X	X			X
<i>Woodwardia areolata</i>	Netted chain fern	X	X	X	X	X
<i>Woodwardia virginica</i>	Virginia chain fern	X	X	X	X	X

Site Inspection Field Form	
Project: Plum Creek	Date: 11/5/09
Name(s) of Data Collectors: Joe Busalacchi	Weather: Clear, 60°F, Windy
Environmental Description: cleared upland and preserved mixed forested wetland	
Polygon: GPS Location: Time: 12:00	
<p>Qualitative Assessment</p> <p>X 1. No observable decline in vegetation community health.</p> <p>X 2. Species diversity is, at a minimum, stable in each wetland polygon.</p> <p>X 3. No more than 1% coverage of invasive exotics and 5% coverage of nuisance native and non-invasive exotic species.</p> <p>X 4. No more than 200 pine (longleaf or slash) trees per acre in upland areas.</p> <p>X 5. Not less than 300 trees per acre in Polygon B (cypress, tupelo or other species).</p>	
<p>On at least a yearly basis, the site will be inspected as follows:</p> <p>A: Perimeter for signs of trespassing, fencing and signage integrity and infestation by exotic or nuisance vegetation;</p> <p>No signs of trespassing or abuse. Site was clear along roads. No signs of exotics or nuisance vegetation.</p>	
<p>B: Internal Roads (Both public and maintenance) for signs of dumping or trespassing, erosion, bridges and road integrity, and exotic or nuisance species infestations;</p> <p>Main gate unlocked to public access. No observable sign of trespassing. Some minor erosion along road.</p>	
<p>C: All construction areas for stabilization and re-vegetation, structure, operation, and integrity;</p> <p>N/a.</p>	
<p>D: Representative polygons for each UMAM community for fuel load, exotic or nuisance species, planted material survival, groundcover, and shrub condition.</p> <p>Wetlands appear appropriate. Uplands are transitional from silvicultural operations; need long leaf pine, wiregrass, and then a prescribed burn.</p>	

Vegetation Assessment Field Form Qualitative Assessment: Plum Creek	
Project: Date: 11/5/09	
Name(s) of Data Collectors: Joe Busalacchi	Weather: Clear, 60°F, Windy
Environmental Description: cleared upland and preserved mixed forested wetland	
Polygon: GPS Location: Time: 12:00	
Nuisance Species: Fuel Load:	
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 A Site 1	Polygon A Site 2	Polygon B Site 3	Polygon B Site 4	Polygon D Site 5
<i>Andropogon virginicus</i>	Broom sedge					X
<i>Aristida stricta</i> var. <i>beyrichiana</i>	Wiregrass					
<i>Arundinaria gigantea</i>	Switchcane	X	X	X	X	X
<i>Asclepias humistrata</i>	Milkweed					
<i>Asimina angustifolia</i>	Slimb-leaved paw paw					
<i>Aster reticulatus</i>	Pinewood aster					
<i>Baptisia lanceolata</i>	Pineland wild indigo					
<i>Berlandiera pumila</i>	Green eyes					
<i>Callicarpa americana</i>	Beauty berry					X
<i>Carex elliotii</i>	Elliot's sedge	X	X	X		
<i>Clethra alnifolia</i>	Sweet pepper bush	X	X	X	X	X
<i>Cliftonia monophylla</i>	Black ti ti	X	X	X	X	X
<i>Cnidioscolus stimulosus</i>	Tread softly					
<i>Cornus florida</i>	Flowering dogwood					
<i>Cyrilla racemiflora</i>	Red ti ti					
<i>Dalea pinnata</i>	Summer-farewell					
<i>Decodon verticillatus</i>	Swamp loosestrife					
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<i>Elephantopus carolinianus</i>	Carolina elephant's foot					
<i>Erigonum tomentosum</i>	Wild buckwheat					
<i>Eriocaulon decangulare</i>	Pipewort			X	X	
<i>Eupatorium compositifolium</i>	Dog fennel	X	X	X	X	X
<i>Gelsemium sempervirens</i>	Yellow jessamine					X
<i>Gnaphalium pensylvanicum</i>	Cudweed					
<i>Hibiscus aculeatus</i>	Comfort root					
<i>Hypericum gentinoides</i>	Pinweed	X		X		
<i>Ilex coriacea</i>	Large gallberry	X	X	X	X	
<i>Ilex glabra</i>	Gall berry					X
<i>Ilex opaca</i>	American holly					
<i>Ilex vomitoria</i>	Yaupon					
<i>Itea virginica</i>	Virginia willow			X	X	
<i>Juncus effusus</i>	Soft rush	X	X	X		
<i>Juncus</i> sp.	Rush	X	X	X		X
<i>Lachnanthes caroliniana</i>	Red root	X	X	X	X	X
<i>Leucothoe axillaris</i>	Coastal dog hobble	X	X		X	
<i>Leucothoe racemosa</i>	Swamp dog hobble	X	X	X		
<i>Liquidambar styraciflua</i>	Sweet gum	X	X	X	X	X
<i>Ludwigia</i> sp.	Primrose willow	X	X	X	X	X
<i>Lycopus amplexens</i>	Clasping waterhorehound					
<i>Lyonia lucida</i>	Fetterbush	X	X	X	X	X
<i>Magnolia grandiflora</i>	Southern magnolia					
<i>Magnolia virginiana</i>	Silver bay	X	X			X

Scientific Name	Common Name	Polygon A Site 1	Polygon A Site 2	Polygon B Site 3	Polygon B Site 4	Polygon D Site 5
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<i>Nymphaea odorata</i>	Fragrant water lily			X	X	
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<i>Persea borbonia</i>	Red bay	X	X	X	X	X
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<i>Pinus elliotii</i>	Slash pine	X	X	X	X	X
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<i>Polygala nana</i>	Wild bachelor's button			X	X	
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<i>Quercus falcata</i>	Red oak					
<i>Quercus geminata</i>	Sand live oak					
<i>Quercus hemisphaerica</i>	Laurel oak	X	X	X	X	
<i>Quercus nigra</i>	Water oak	X	X	X	X	
<i>Rhododendron viscosum</i>	Swamp azalea			X	X	
<i>Rhus copallinum</i>	Winged sumac					
<i>Rubus cuneifolius</i>	Sand blackberry			X	X	X
<i>Schrankia microphylla</i>	Sensitive briar					
<i>Serenoa repens</i>	Saw palmetto					
<i>Smilax glauca</i>	Greenbriar					
<i>Smilax</i> sp.	Greenbriar	X	X	X	X	X
<i>Sphagnum</i> sp	Sphagnum moss	X	X	X	X	
<i>Taxodium ascendens</i>	Pond cypress	X	X	X	X	
<i>Toxicodendron radicans</i>	Poison ivy	X	X			X
<i>Triadenum virginicum</i>	Marsh St. John's wort					
<i>Trichostema dichotomum</i>	Blue curls					
<i>Vaccinium arboreum</i>	Sparkleberry					
<i>Vaccinium corymbosum</i>	Highbush blueberry	X		X	X	X
<i>Vitis rotundifolia</i>	Muscadine grape	X	X			X
<i>Woodwardia areolata</i>	Netted chain fern	X	X	X	X	X
<i>Woodwardia virginica</i>	Virginia chain fern	X	X	X	X	X