

PLUM CREEK RESTORATION PLAN

UWRMP Section 5.3.11 Supplement

Revised 2/20/08

Site Description:

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. Site visits and analysis of digital orthophotoquads (DOQs), historic aerials, NRCS soils maps, and National Wetlands Inventory (NWI) maps, indicate that approximately 60 acres (46%) are wetland, with the remaining 70 acres (54%) being upland. Hydric soils cover ~55% of the property. This parcel is connected to the Holmes Creek floodplain by an intermittent stream. Low-density rural/residential development with concomitant septic tanks, managed lawns/pasture, and horse or other animal stock is adjacent to the north and northwest property boundaries. To the west is managed pine plantation on private lands. To the east are scrubby “cutover” pinelands, also on private lands. NFWMD managed lands, increasingly under encroachment from development, are on the southern boundary along the Holmes Creek floodplain.

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:

Native pine forest (FLUCCS 411) will be restored from existing pine plantation using restoration techniques that may include thinning of bedded slash pine, seeding of herbaceous vegetation as needed, prescribed fire, mechanical brush reduction, and perpetual ecological management. 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) will be preserved in their present 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 will be 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 NFWFMD lands ~500' south of the Plum Creek property boundary. Acquisition of this tract will eliminate the high probability of future rural/residential development and ensure its perpetual preservation.

Functional UMAM Units:

In consultation with the CORPS, it is estimated that 12.07 credits will be obtained from implementation of this mitigation effort.

Success Criteria:

Success criteria below are derived from Chapter 11 of the UWRMP. Specific success criteria are established prior to development of a mitigation area and therefore must indicate that mitigation objectives have been met. Each criterion is modified based on the characteristics of a specific mitigation site.

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).

Monitoring:

Monitoring protocols necessary to ensure effective preservation, enhancement and restoration are described in Chapter 11.0 of the UWRMP. Specific monitoring to be implemented at this site will be determined in consultation with the CORPS.

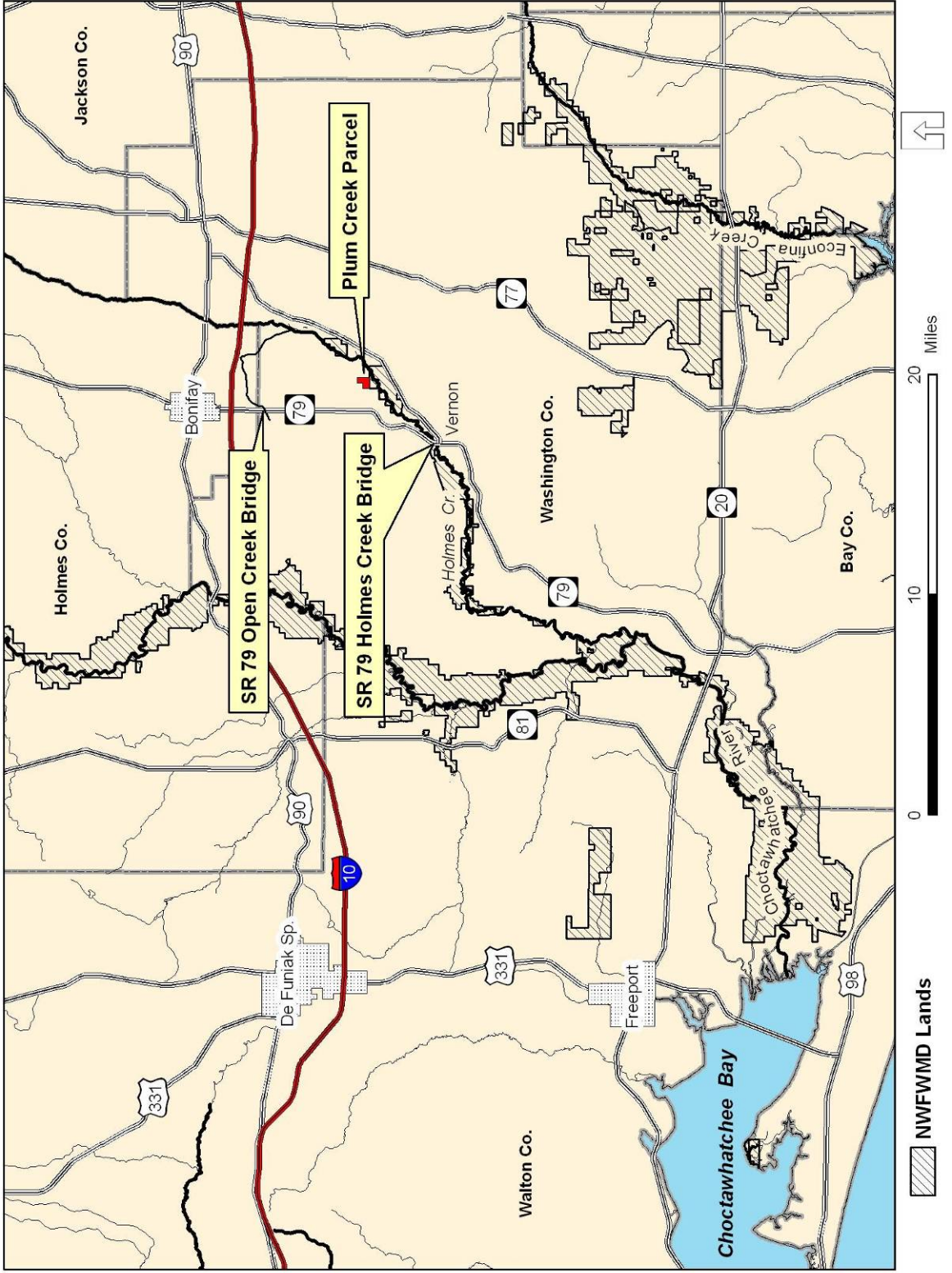
Long-term Management:

The NFWFMD is responsible for ensuring the perpetual management of mitigation lands. Florida Statutes 373.1391(1)(a) and 373.59(3) mandate the ecological management and restoration, to the extent practicable, of lands owned by the NFWFMD. Mitigation lands owned by the NFWFMD 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” (NFWFMD 1998). Long-term management is described in the UWRMP Chapter 11.

Annual Status Reports:

Annual status reports, if required by the CORPS, will be generated following restoration activities and posted at <http://www.nfwmdwetlands.com>. A summary status report for all mitigation projects, including cost accounting, will also be provided annually to the CORPS if requested.

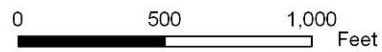
Location of Plum Creek Property in Relation to FDOT Impacts



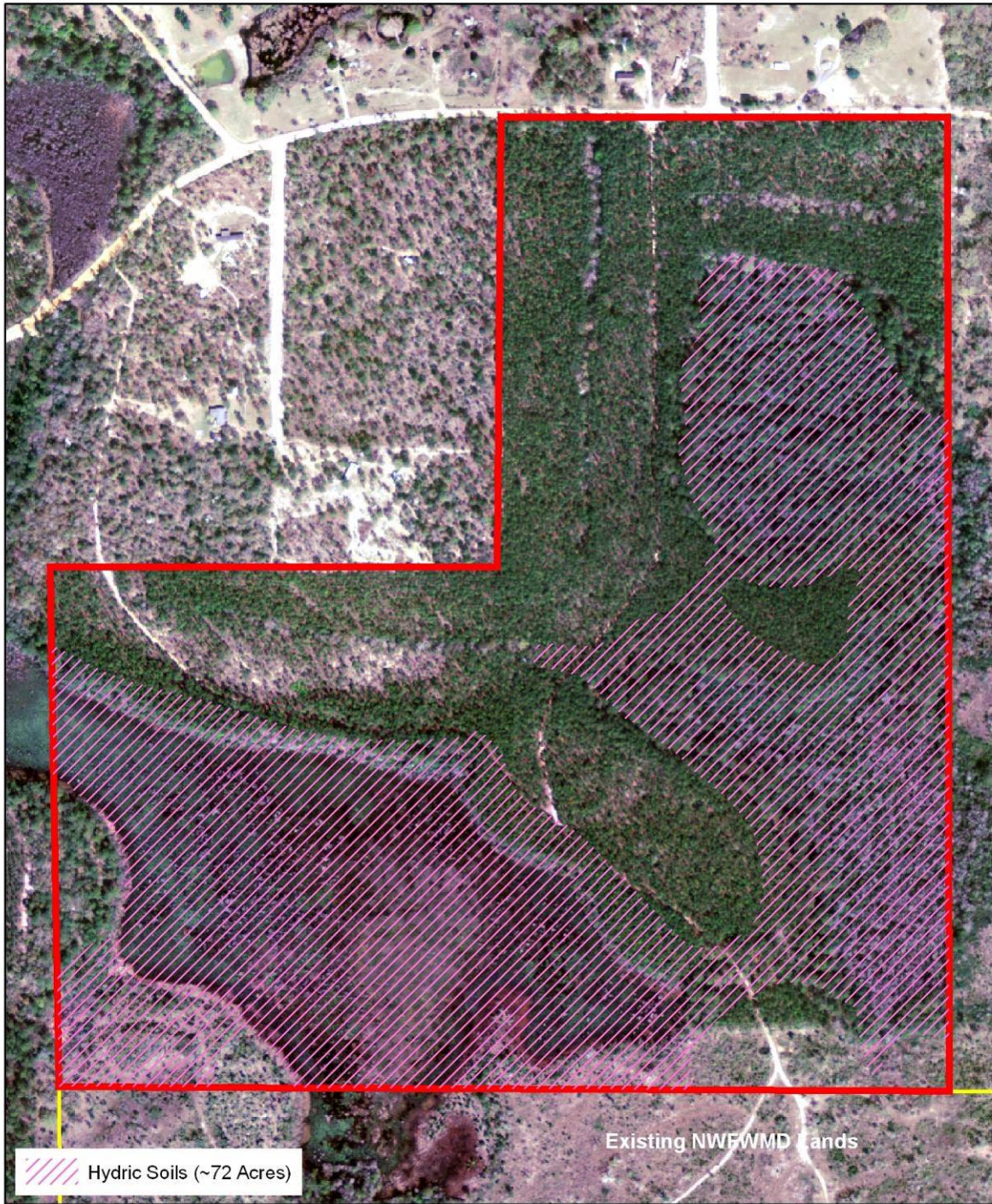
Plum Creek Property - 1955 B&W Aerial



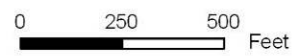
~130 Acres Total
(~70 Acres Uplands and ~60 Acres Wetlands)



Plum Creek Property - Hydric Soils



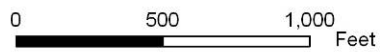
~130 Acres Total
(~70 Acres Uplands and ~60 Acres Wetlands)



Plum Creek Property Restoration



~130 Acres Total
(~70 Acres Uplands and ~60 Acres Wetlands)
2004 DOQ



Plum Creek Mitigation Credits						
Polygon	Acres	Existing FLUCCS	Post- Restoration FLUCCS	Adjusted UMAM Delta*	Estimated Wetland UMAM Credits	Mitigation Activity
A & C	30.00	630	630	0.17	5.00	Preservation and Upland Buffer Restoration
B	30.00	640	630	0.23	6.92	Planting of Appropriate Wetlands Species; Beaver Management and Dam Removal; Upland Buffer Restoration
D	0.88	625	625	0.17	0.15	Preservation and Upland Buffer Restoration
E	65.00	441	411	N/A	N/A	Upland Restoration
F	2.00	441	411	N/A	N/A	Upland Restoration
G	3.00	411	411	N/A	N/A	Upland Restoration
Total:	130.88				12.07	

*Time Lag = 30 years (Polygon B Only); Risk = 1 (All Polygons)

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

Site/Project Name Plum Creek		Application Number Not Applicable	Assessment Area Name or Number Mixed Forested Wetlands (Polygons A & C)	
FLUCCs code 630 (Current) 630 (With Mitigation)		Further classification (optional) Intact, Forested Wetlands	Impact or Mitigation Site? Mitigation	Assessment Area Size 30 Acres
Basin/Watershed Name/Number Choctawhatchee	Affected Waterbody (Class) III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) None		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Bordered by mature slash pine plantation developed on upland sites. Surface drainage will popoff to south during wet periods, eventually reaching Holmes Creek.				
Assessment area description Intact, forested, depressional wetlands bordered by mature pine plantation.				
Significant nearby features Holmes Creek to south. Borders existing NFWFMD lands.		Uniqueness (considering the relative rarity in relation to the regional landscape.) Typical habitat.		
Functions Water quality; water storage; floral and faunal habitat.		Mitigation for previous permit/other historic use 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) Mammals including white-tailed deer, opossum, bobcat, raccoon, and black bear. Various bird species. Herpetofauna including various snakes such as cottonmouth snake, salamander and frog species.		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Black bear.		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Deer tracks.				
Additional relevant factors: <p align="center">---</p>				
Assessment conducted by: CORPS / MRT		Assessment date(s): 1/24/2008		

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

Site/Project Name Plum Creek	Application Number Not Applicable	Assessment Area Name or Number Mixed Forested Wetlands (Polygons A & C)
Impact or Mitigation Mitigation	Assessment conducted by: CORPS / MRT	Assessment date: 1/24/2008

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
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

.500(6)(a) Location and Landscape Support	Without Mitigation - surrounding uplands have a high potential of being converted to low-density, rural/residential development with single-family homes, managed lawns, septic tanks, and potential horse and/or farm animal usage. With Mitigation - the surrounding uplands will be restored and managed in perpetuity as native forest habitat.				
<table border="1"> <tr> <td>w/out mit</td> <td>with</td> </tr> <tr> <td>7</td> <td>9</td> </tr> </table>	w/out mit	with	7	9	
w/out mit	with				
7	9				
.500(6)(b)Water Environment (n/a for uplands)	Without Mitigation - Existing hydrology is less than optimal due to upland buffer changes. With Mitigation - restoration of uplands normal seepage and ET rates will be reestablished.				
<table border="1"> <tr> <td>w/out mit</td> <td>with</td> </tr> <tr> <td>7</td> <td>9</td> </tr> </table>	w/out mit	with	7	9	
w/out mit	with				
7	9				
.500(6)(c)Community structure	Without Mitigation - Potential for future degradation from exotic and invasive vegetation, logging, perimeter residential development or other impacts. With Mitigation - Preservation, enhancement and implementation of long-term ecological management.				
<table border="1"> <tr> <td>w/out mit</td> <td>with</td> </tr> <tr> <td>8</td> <td>9</td> </tr> </table>	w/out mit	with	8	9	
w/out mit	with				
8	9				

Score = sum of above scores/30 (if uplands, divide by 20)				
<table border="1"> <tr> <td>w/out mit</td> <td>with mit</td> </tr> <tr> <td>0.73</td> <td>0.90</td> </tr> </table>	w/out mit	with mit	0.73	0.90
w/out mit	with mit			
0.73	0.90			

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

For impact assessment areas
N/A

Delta = [with - w/out]
0.17

If mitigation / restoration
Time Lag Factor () = 1
Risk factor = 1

olygon Acreage = 30
For mitigation assessment areas
Mitigation Credits
[(Delta / (Time Lag * Risk)) * Acres] = 5.00

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

Site/Project Name Plum Creek		Application Number Not Applicable	Assessment Area Name or Number Non-Forested Wetlands (Polygon B)	
FLUCCs code 640 (Current) 630 (With Mitigation)	Further classification (optional) Cypress is present, although not in sufficient density for this polygon to be considered "forested."		Impact or Mitigation Site? Mitigation	Assessment Area Size 30 Acres
Basin/Watershed Name/Number Choctawhatchee	Affected Waterbody (Class) III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) None		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Bordered by mature slash pine plantation developed on upland sites. Surface drainage will popoff to south during wet periods, eventually reaching Holmes Creek. Intermittent stream flows in from north.				
Assessment area description Non-forested, depressional wetland surrounded by uplands in mature slash pine plantation. Historic aerials indicate this depression was once forested. Timer harvesting may have occurred in the past. Beaver activity may have caused increased hydroperiods and impeded recruitment of replacement canopy trees.				
Significant nearby features Holmes Creek to south. Borders existing NWFWM lands.		Uniqueness (considering the relative rarity in relation to the regional landscape.) Typical habitat.		
Functions Water quality; water storage; floral and faunal habitat.		Mitigation for previous permit/other historic use 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) Mammals including white-tailed deer, opossum, bobcat, raccoon, and black bear. Various bird species. Herpetofauna including various snakes such as cottonmouth snake, salamander and frog species.		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Black bear.		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Deer tracks.				
Additional relevant factors: <p align="center">---</p>				
Assessment conducted by: CORPS / MRT		Assessment date(s): 6/24/2008		

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

Site/Project Name Plum Creek	Application Number Not Applicable	Assessment Area Name or Number Non-Forested Wetlands (Polygon B)
Impact or Mitigation Mitigation	Assessment conducted by: CORPS / MRT	Assessment date: 1/24/2008

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
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

.500(6)(a) Location and Landscape Support	Without Mitigation - surrounding uplands have a high potential of being converted to low-density, rural/residential development with single-family homes, managed lawns, septic tanks, and potential horse and/or farm animal usage. With Mitigation - the surrounding uplands will be restored and managed in perpetuity as native forest habitat.				
<table border="1"> <tr> <td>w/out mit</td> <td>with</td> </tr> <tr> <td>6</td> <td>9</td> </tr> </table>	w/out mit	with	6	9	
w/out mit	with				
6	9				
.500(6)(b)Water Environment (n/a for uplands)	Without Mitigation - Appropriate hydrology not present for forested wetland system--beaver activity has caused an increase in the depth and duration of flooding, and unnaturally stable hydroperiods. With Mitigation - Beaver dam removal.				
<table border="1"> <tr> <td>w/out mit</td> <td>with</td> </tr> <tr> <td>6</td> <td>9</td> </tr> </table>	w/out mit	with	6	9	
w/out mit	with				
6	9				
.500(6)(c)Community structure	Without Mitigation - Site not restored to pre-logging and beaver dam condition. With Mitigation - Bare-root cypress and gum or other appropriate species will be planted (300 trees / acre) to restore community structure; beaver dam removed.				
<table border="1"> <tr> <td>w/out mit</td> <td>with</td> </tr> <tr> <td>4</td> <td>9</td> </tr> </table>	w/out mit	with	4	9	
w/out mit	with				
4	9				

Score = sum of above scores/30 (if uplands, divide by 20)				
<table border="1"> <tr> <td>w/out mit</td> <td>with mit</td> </tr> <tr> <td>0.53</td> <td>0.90</td> </tr> </table>	w/out mit	with mit	0.53	0.90
w/out mit	with mit			
0.53	0.90			

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

For impact assessment areas
N/A

Delta = [with - w/out]
0.37

If mitigation / restoration
Time Lag Factor (30-year federal lag) = 1.59
Risk factor = 1

Polygon Acreage = 30
For mitigation assessment areas
Mitigation Credits
[(Delta / (Time Lag * Risk)) * Acres] = 6.92

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

Site/Project Name Plum Creek		Application Number Not Applicable	Assessment Area Name or Number Hydric Flatwood Popoff (PolygonD)	
FLUCCs code 625(Current) 625 (With Mitigation)		Further classification (optional) Pine Forest	Impact or Mitigation Site? Mitigation	Assessment Area Size 0.88 Acres
Basin/Watershed Name/Number Choctawhatchee	Affected Waterbody (Class) III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) None		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands "Popoff" connection between intact, mixed forested wetlands (Polygon A) and currently non-forested wetlands (Polygon B) that have been severely impacted by beaver activity.				
Assessment area description Wetland "popoff" connection dominated by coniferous species. Hydric soils present.				
Significant nearby features Holmes Creek to south. Borders existing NFWFMD lands.		Uniqueness (considering the relative rarity in relation to the regional landscape.) Typical habitat.		
Functions Water quality; water storage; floral and faunal habitat.		Mitigation for previous permit/other historic use 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) Mammals including white-tailed deer, opossum, bobcat, raccoon, and black bear. Various bird species. Herpetofauna including various snakes such as cottonmouth snake, salamander and frog species.		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Black bear.		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Deer tracks.				
Additional relevant factors: <p align="center">---</p>				
Assessment conducted by: CORPS / MRT		Assessment date(s): 1/24/2008		

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

Site/Project Name Plum Creek	Application Number Not Applicable	Assessment Area Name or Number Hydric Flatwood Popoff (PolygonD)
Impact or Mitigation Mitigation	Assessment conducted by: CORPS / MRT	Assessment date: 1/24/2008

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
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

.500(6)(a) Location and Landscape Support	Without Mitigation - surrounding uplands have a high potential of being converted to low-density, rural/residential development with single-family homes, managed lawns, septic tanks, and potential horse and/or farm animal usage. With Mitigation - the surrounding uplands will be restored and managed in perpetuity as native forest habitat.				
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7	9				
.500(6)(b)Water Environment (n/a for uplands)	Without Mitigation - Existing hydrology is less than optimal due to upland buffer changes. With Mitigation - restoration of uplands normal seepage and ET rates will be reestablished.				
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w/out mit	with				
7	9				
.500(6)(c)Community structure	Without Mitigation - Future degradation from exotic and invasive vegetation, logging, perimeter residential development or other impacts. With Mitigation - Preservation, enhancement and implementation of long-term ecological management.				
<table border="1"> <tr> <td>w/out mit</td> <td>with</td> </tr> <tr> <td align="center">7</td> <td align="center">8</td> </tr> </table>	w/out mit	with	7	8	
w/out mit	with				
7	8				

Score = sum of above scores/30 (if uplands, divide by 20)				
<table border="1"> <tr> <td>w/out mit</td> <td>with mit</td> </tr> <tr> <td align="center">0.70</td> <td align="center">0.87</td> </tr> </table>	w/out mit	with mit	0.70	0.87
w/out mit	with mit			
0.70	0.87			

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

For impact assessment areas
N/A

Delta = [with - w/out]
0.17

If mitigation / restoration
Time Lag Factor (x years) = 1
Risk factor = 1

Polygon Acreage = 0.88
For mitigation assessment areas
Mitigation Credits
[(Delta / (Time Lag * Risk)) * Acres] = 0.15

Plum Creek Property
 UMAM Credit Assessment - January 24, 2008
 CORPS / MRT

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

Polygon	Acres	L1	L2	W1	W2	C1	C2	W/Out Score	With Score	Raw Delta	Time Lag	P Factor	Risk	Adjusted Delta	UMAM Credits
A/C	30	7	9	7	9	8	9	0.73	0.90	0.17	1	N/A	1	0.17	5.00
B	30	6	9	6	9	4	9	0.53	0.90	0.37	1.59	N/A	1	0.23	6.92
D	0.88	7	9	7	9	7	8	0.70	0.87	0.17	1	N/A	1	0.17	0.15
	60.88														12.065

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